UTILIZATION OF A TEACHING VIDEO TO IMPROVE OUTCOMES FOR POST MI AND STENT PATIENTS

by

Amy Marie Winiger RN, MSN, ACNP-BC, AACC

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Approved by:

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Dr. Katie Shue-McGuffin

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Dr. Kathleen Jordan

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Dr. Ashley Moore-Gibbs

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Dr. Anita Blanchard

ABSTRACT

Amy Winiger ACNP-BC, AACC. Utilization of a Teaching Video to Improve Outcomes for Post MI and Stent Patients. (Under the direction of Dr. Katie Shue-McGuffin)

The Advanced Practice Providers (APPs) for Sanger Heart and Vascular Institute (SHVI), an adult cardiology practice in a large metropolitan city, provide hospital follow-up care to post-myocardial infarction (MI) patients. The APPs identified a problem: patients retained very little of the information they receive during their hospitalization. The purpose of this pilot project was to evaluate the impact of a unique and succinct post-MI educational video addressing Ask Me 3® questions on patient's knowledge of self-care activities to promote cardiovascular health. The project used a quasi-experimental design with a pre-test and post-test to evaluate the effectiveness of a post-MI educational video compared to the standard teaching methods. There were 25 total participants, 12 in the control group and 13 in the intervention group, enrolled in the project. The increase in the intervention group's post- test scores was statistically significant (p value = 0.0056), showing a vast improvement in knowledge with an educational video. A post-MI educational video may effectively improve patient outcomes when incorporated with the standard teaching methods. Patients may view the video multiple times, improving their knowledge of lifestyle modifications following hospitalization.

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DEDICATION

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LIST OF ABBREVIATIONS

AMI	Acute Myocardial Infarction
ACC	American College of Cardiology
AHA	American Heart Association
APP	Advanced Practice Providers
MD	Medical Doctor
MI	Myocardial Infarction
NSTEMI	Non-ST elevation MI
PFAC	Patient and Family Advisory Committee
RN	Registered Nurse
SHVI	Sanger Heart and Vascular Institute
STEMI	ST-elevation myocardial infarction

CHAPTER 1: INTRODUCTION

Coronary artery disease is the primary cause of death for men and women worldwide (CDC, 2015). Every 40 seconds someone in the United States suffers a myocardial infarction (MI), with 790,000 cases in America annually. Of these cases, over 70 % experience their first MI (Benjamin et al., 2017) while 26 % have their second MI (CDC, 2015). It is estimated that 610,000 people die of heart disease in the United States every year. That is approximately one out of every four deaths. (CDC, 2015).

After a myocardial infarction, patients must change their lifestyles. However, post-MI patients often feel overwhelmed by their lifestyle modifications. (Wlodarczyk., 2017; Koh, Wang, Richards, Chan & Cheng, 2016; Rich et al., 2016). Part of post-MI care should include educating patients about their new lifestyle modifications in a manner that is easy for them to learn and remember. Innovative strategies utilizing technology to facilitate patient education could improve the trajectory of care for the post-MI patients (Abbaszadeh, Borhani & Asadi, 2011; & Koh et al., 2016). Using technology to create a video is one strategy that may assist in reducing stress for the post-MI patient.

Koh et al. (2016) examined the efficacy of an advanced practice nurse-led telehealth rehabilitative program on post myocardial infarction (MI) readmission rates. The study cited that hospital readmissions were linked with lower patient satisfaction, decreased health care quality, and efficiency. Their review of the literature revealed that the utilization of evidence-based practice improves outcomes for post-MI patients by enhancing the traditional discharge teaching. Devore et al. (2016) states that in 2009 the Centers for Medicare and Medicaid began publishing 30-day incidences of hospital

readmissions for heart failure, pneumonia, and acute myocardial infarction to provide transparency to health care consumers and improve quality of care. They also have ceased reimbursement for readmission for specified diagnosis codes within 30 days. One in five Medicare beneficiaries are readmitted within 30 days at a cost of greater than $17 billion annually; as a result, hospitals are motivated to develop programs to prevent costly readmissions (Devore et al., 2016). In sum, it is vital to improve the quality of care for post-MI patients, through evidence-based interventions such as technology.

Background

Advanced practice providers (APPs) for the Sanger Heart and Vascular Institute (SHVI) provide care to the adult cardiac population. Patients that are admitted to the local hospital system, Atrium Health – Main Campus, with the diagnoses of ST elevation myocardial infarction (STEMI) or non-ST elevation myocardial infarction (NSTEMI) have access to videos on their television during their hospitalization via the Get Well Network. The Get Well Network is a company that produces 5-minute videos tailored to the patients' diagnosis; in this case, MI diagnosis. The topics include goal setting, atherosclerosis, and the rationale for their medical regimen. The nurses at Atrium Main encourage the patients to view the videos during their hospital stay, which is an average length of two days. They are all separate videos; there is not one succinct video that covers all the material the APPs discuss at the patient's first follow up hospital visit. Since the videos are proprietary, the patients do not have access to the videos once they are discharged. The Acute Myocardial Infarction (AMI) nurse navigators also give the patients a 48 page-booklet to read, titled, "Heart Attack: Bouncing Back" (Pritchett &

Hall, 2017). These are the only two tools used at Atrium Main to teach patients about their medical diagnosis.

The STEMI and NSTEMI patients are discharged from Atrium Main and are seen for follow- up at SHVI Interventional Clinic. The APP's role during the visit is to support the patient's development of self-care behaviors. The APPs spend a large portion of the visit reiterating the educational material discussed during their hospitalization. The APPs have identified the problem: patients retained very little of the information they received during their hospitalization. Thus, this scholarly project involved the development of an educational video about post-myocardial infarction and/or stent placement that the patient may view repeatedly prior to and after discharge. The video may assist the patient in increasing their knowledge of self-care, and as a result, improve their cardiovascular health.

Problem Statement

There is a lack of knowledge regarding patients' treatment regimens following the discharge teaching during hospitalization. NSTEMI and STEMI patients are seen at the SHVI Interventional Follow-up Clinic in three to ten business days depending on their GRACE score, a risk prediction tool (Muene et al, 2011). During the follow-up visit, the APPs discovered that the patients did not remember the information they received during their hospitalization. Based on the SHVI APPs' experience, a high percentage of patients in the Interventional Follow-Up Clinic either do not have their teaching booklet, have not read it since discharge, or do not recall the information in the Get Well Network videos. The majority of the APPs' time during the 30-minute visit was spent reiterating the

educational material that was previously provided to them. In addition, patients often bring a significant other who also has questions about their loved one's secondary prevention intervention.

Purpose of Project

The purpose of this DNP Project was to develop and implement an educational video on cardiac risk factor modification that could be accessed and viewed repeatedly by the post-MI and /or stent patient. This method of repeated exposure to audio-visual education can assist in reinforcing the retention of the material. Also, the patients had the ability to view the video with their significant others. This enabled them to adopt the lifestyle changes that are crucial for secondary cardiovascular disease prevention.

Clinical Question

The PICOT question for this DNP scholarly project was: In patients suffering a myocardial infarction (P) how does utilization of an educational video addressing Ask Me 3® questions (I) compared to standard hospital teaching methods (C) affect patient's knowledge on self-care activities to promote cardiovascular health (O) in the timeframe prior to discharge from the hospital to the post discharge follow up visit, within three to ten business days depending on their GRACE score (T)?

CHAPTER 2: LITERATURE REVIEW

The project coordinator performed a comprehensive literature review utilizing the databases of CINAHL, PubMed, and Web of Science. The project coordinator collaborated with librarians from the University of North Carolina at Charlotte, as well as Western Carolina University, for the recommended databases and search terms. The search terms included: video or film or audio-visual or audiovisual or multimedia, and myocardial infarction or heart attack, and patient education or patient teaching or counseling or guidance or patient information. The literature search revealed 132 articles, of which 29 were selected. The articles were on selected topics that applied to self-care, MI patients, or use of audio-video as a teaching tool. The following websites were also used: "United States Government Services and Information," (n.d.) and "National Center for Chronic Disease Prevention and Health Promotion Division for Heart Disease and Stroke Prevention," (n.d.).

From 1975-2012, Tuong, Larsen & Armstrong (2014) performed a systematic review of 28 studies with video interventions in four databases with over 12,000 patients. They concluded that studies with control groups using a telephone intervention were less likely to impact behaviors when compared to video intervention. O'Keefe & Jensen (2007) conducted a meta-analysis of 93 studies with over 21,000 patients. They noted that studies that included themes of gain framed messaging, emphasizing the potential benefits of enacting disease prevention behaviors were statistically significant with an increase in post-test scores. The achievement of disease prevention aligns with the goals of the Office of Disease Prevention and Health Promotion's "Healthy People 2020"

initiative, accentuating health prevention to improve the quality and quantity of life for United States citizens (US Department of Health and Human Services, n.d.).

Several articles emphasized that interprofessional collaboration of the health care team is beneficial for patient engagement in self-care. (Wiggins, Rogers, DiDomenico, Cook & Page II, 2013; Pinchera, Dellolacono & Lawless, 2018). Nolan & McKee (2016) revealed that due to the short stay, a large proportion of the percutaneous coronary intervention (PCI) patients thought that coronary artery disease was no longer a concern for them after their PCI. It was recommended that creative methods of teaching could bolster their knowledge. Thus, the addition of a video to the patients' educational material would assist in meeting this learning need.

The literature supports the use of video intervention, in addition to the standard teaching for patients with heart failure, to increase self-care (Albert, Buchsbaum & Li 2007; Veroff et al., 2015; & Boyde et al., 2018). Self-care behaviors included weighing themselves daily and notifying the interdisciplinary team for adjustment of diuretics. Boyde et al., (2018) reported lowering the risk of readmission in 12 months by 30% by promoting self- care activities.

Life's Simple Seven (LS7) metric was developed by the American Heart Association (AHA) to assess progress towards meeting their 2020 strategic goals of a 20% reduction in cardiovascular deaths (American Heart Association, 2020). This is a composite measure of seven cardiovascular risk factors including tobacco use, sedentary lifestyle, diet, blood pressure management, cholesterol, body mass index (BMI) and glucose (American Heart Association, 2020). In studies conducted on self-care deficits

relating to post-MI patients there was a lack of comprehension and ability to adopt lifestyle modifications. In addition, ineffective planning of a patient's follow-up and the inability of the patient to recognize when to contact a physician can also contribute to the patient's welfare (Aaron et al, 2017). As a result, the probability that the patient will utilize inpatient and outpatient health care services is increased. This trend contributes to escalating health care costs (Aaron et al. 2017; Abbaszadeh et al, 2011; & Koh, et al., 2016). Thus, there is a direct correlation between self-care and improved patient outcomes post-MI.

Researchers conducted a pilot study in the coronary care unit with an intervention group of first time acute care coronary syndrome (ACS) patients viewing an educational video on anatomy and physiology of the heart, risk factors for coronary artery disease (CAD), physical activity recommendations and warning sign identification (Efakarpidis, Pavi & Kyriopoulos, 2010). The results of the study were statistically significant with the mean knowledge score of intervention group increasing by 4.43. Hence, to find a means of improving outcomes for STEMI and NSTEMI patients via audiovisual methods would benefit the patients and potentially create cost savings for the patient and the hospital.

Overall, the literature review revealed that numerous studies have applied the use of short, 5 -to 10- minute videos to augment traditional teaching methods by a health care professional: registered nurse (RN), advanced practice provider (APP), or medical doctor (MD). These studies were comprised of varying patient populations with the medical diagnoses of venous thromboembolism, breast cancer, myocardial infarction, prostate cancer, and stroke. They were statistically significant for improving knowledge retention (Bouton, 2012; Wisher, Oermann, Zadvinskis & Kinney 2018; Marini et al., 2014;

Gadler, Crist, Brandstein & Schneider 2016; Denny, Vahidy, Vu, Sharried & Savitz 2017; & Dhawan et al, 2008). In another study, researchers investigated the use of visual narrative illustrations with nursing students to enhance their didactic learning as an innovative approach to increasing knowledge retention. The project video was enhanced by colorful visual aids to increase retainment of the information. The researchers concluded that videos with visual aids has the potential to bridge knowledge gaps (El Hussein, Toufic, Saylers & Osuji, 2016).

Conceptual Framework

The objective of this DNP scholarly project was to increase knowledge of self-care in post-MI patients; therefore, an appropriate conceptual framework is Lewin's change theory. Numerous research authors have described Lewin's stages as a conceptual framework for comprehending the process of change within a group (Mitchell, 2012; Kritsonis, 2004; Zaccagnini & White, 2013). These three stages are unfreezing, moving, and refreezing.

Unfreezing requires assessing the need for change, working together as a team, and problem solving to create new interventions. Evidence-based research has shown that there is a need for change to meet the knowledge deficits of the post-MI patient. Freezing requires the key internal stakeholder of the organization, SHVI, to support the change. The new interventions must then be maintained or allowed to refreeze in order to sustain the desired change.

Lewin's framework applies Essential Six of doctoral education, interprofessional collaboration, to improve patient and population health outcomes (Moran, Burson &

Conrad (2017). The interdisciplinary team at SHVI has found that post-MI patients have lower self-care behaviors. In sum, in an effort to change negative self-care behaviors and improve patient outcomes, an educational video was developed for the post-MI and/or stent patients that contained the AHA's LS7 cardiovascular risk factor recommendations and Ask Me 3® questions to ask their health care provider (Institute for Health Improvement, 2015). The three questions that the patient asks are "What is my main problem?", "What do I need to do?", and "Why is it important for me to do this?"

Project objectives

A short-term goal of the study was to increase adherence to discharge teaching including medication adherence, Mediterranean diet, and cardiac rehab, thus, establishing an association between the video instruction and improved knowledge related to self-care activities. A secondary long-term goal was to decrease readmission rates. This was a pilot project. A questionnaire was administered to both groups, the intervention and control groups, prior to the teaching in the hospital and at their first SHVI Interventional Follow-Up Clinic visit. The questionnaire was developed from the Institute for Health Improvement (IHI) Ask Me 3® (2015) questions.

Kleinpell (2013) describes advanced practiced nursing (APN) outcomes used in APN effectiveness research. The desired outcomes of the project were an improvement of patient outcomes with an increase in the mean score of knowledge of cardiac risk factors after video training. If the data is statistically and clinically significant for this video intervention, this tool could become the established teaching mode with NSTEMI and STEMI patients at SHVI.

CHAPTER 3: PROJECT DESIGN/METHODOLOGY

The study used a quasi-experimental design with a pre-test and post-test to evaluate the effectiveness of a post-myocardial educational video compared to the standard teaching methods. The video utilized Ask Me 3® IHI (2015) content for patients hospitalized with the diagnosis of STEMI or NSTEMI within 24 hours of their discharge.

This project design involved NSTEMI and STEMI patients admitted at Atrium Health-Main Campus. The sample of approximately 30 patients who consented to the study were randomized into two groups: intervention and control. The intervention group was shown an educational video produced by the project coordinator. The control group received the routine teaching method in the hospital. The video was introduced to the post-MI patients prior to their discharge. The intervention group was instructed to view the video on repeated occasions prior to their discharge from the hospital and until their hospital follow-up appointment at the SHVI Interventional Clinic within three to ten business days depending on their GRACE score.

Setting

The setting for this project was the post-percutaneous coronary intervention unit, 6A. As a tertiary academic medical center with 874 inpatient beds, Atrium Health is a Level I trauma center hospital. It is a high-volume center that serves Charlotte, North Carolina and the surrounding area. All of the patients admitted to the Sanger Heart and Vascular Institute (SHVI) service lines of the Interventional Service or the General Service at Atrium Health, that met the inclusion criteria listed below, were offered enrollment in the project. In the General Service line and the Interventional Service line,

the patients are cared for by the interprofessional team of advanced practice providers, cardiologists, and nurses. The team has specialized training in caring for patients with myocardial infarctions and cardiac stenting.

Patient Population

The project coordinator's goal was to enroll 30 people to participate in this pilot study at Atrium Main on the telemetry unit of 6A. Patients with a diagnosis of STEMI or NSTEMI were enrolled in the study. Baseline demographic characteristics of age, gender, marital status, educational level, job, annual household income and family history were included in the data collection by the project coordinator.

Potentially eligible patients were identified by the project coordinator from the inpatient list for the SHVI General Service and Interventional Service. The project coordinator communicated daily with the AMI nurse navigators to identify potential patients. The project was approved by the Institutional Review Board (IRB) at Atrium Health as a quality improvement project.

Inclusion and Exclusion Criteria

The inclusion criteria included patients admitted to 6A, with no previous history of myocardial infarction, over 35 years old, and able to read and write in English. Participants also needed to own a smart phone. Exclusion criteria included patients that were non-English speaking, or who had a diagnosis of dementia.

Intervention

The sample of approximately 30 patients who consented to the study were randomized into an intervention and control group. The intervention group viewed the post-MI and/or stent educational video produced by the project coordinator in addition to the standard teaching method, "Heart Attack: Bouncing Back," on the day of discharge from the hospital. The control group received the routine teaching method, "Heart Attack: Bouncing Back," (Pritchett & Hall, 2017) in the hospital by the AMI nurse navigators on the day of discharge from the hospital.

A seven-minute myocardial infarction and/or stent video was shown to the patients who were hospitalized at Atrium Health on 6A with the diagnosis of STEMI or NSTEMI prior to their hospital discharge. The video was developed by the project coordinator, with input from members of the interprofessional team consisting of nurses, APPs, MDs, a health literacy advisor, and the Atrium Health DNP Council. The project coordinator met with the SHVI health literacy expert who assisted in development of the video script. The script was written at a 6th grade reading level in order to ensure the patients could comprehend the material. The educational video was approved by Atrium Main's Cardiac Patient and Family Education Committee (PFAC). Next, the Instructional Learning Support Center experts at the University of North Carolina at Charlotte reviewed the script and added colorful visual aids. Once this had the final approval by the Instructional Learning Support Center, the video was produced. A script of the video is in Appendix B.

The post-myocardial infarction and/or stent placement video contained education on coronary anatomy, and secondary prevention of cardiovascular disease. This included the

Mediterranean diet, exercise recommendations, cardiac rehab, and medical regimen. The Ask Me 3 ® (IHI, 2015) questions, a validated teaching tool, were included in the video. The three questions included "What is my main problem?", What do I need to do?", and "Why is it important for me to do this?" At the beginning of the video, the project coordinator stated that the Ask Me 3 ® questions (IHI, 2015) were incorporated into the video and encouraged the viewer to ponder their responses while viewing. The video was shown on an iPad while in the hospital. The patients' significant others could view the video with them, although they were not included as participants of the study. The patients had the ability to access the video repeatedly from the time prior to their discharge to their SHVI appointment by means of a website hyperlink that was provided to them by the project coordinator.

After consultation with the health literacy advisor, a 9-item open ended questionnaire was developed and, like the script for the video, written at a 6th grade reading level. The questionnaire was reviewed by an Interventional Cardiologist and the APP Cardiology Fellowship Director for accuracy of content. The questions assessed knowledge of self-care, treatment post-myocardial infarction and/or stenting, and cardiac medications. The pre-test was administered to the intervention (video) and control (standard teaching) groups prior to discharge. The post- test was administered to the intervention and control groups at the follow-up visit with the Interventional Clinic at SHVI.

SWOT Analysis

Moran, Conrad & Burson (2017) discuss an assessment tool used to perform an evaluation of a project, community, or process. A SWOT Analysis, identifies the

strengths, weaknesses, opportunities, and threats to successful implementation of a project. There are two diverging types of analysis: internal and external. An internal analysis represents attributes that are from within the project, whereas external attributes are extraneous variables. Each variable can possess factors that can support or impede the project.

Strengths

Essential Six, interprofessional collaboration, is an internal strength of the project. The team consisted of nurses, physicians, advanced practice providers, and the SHVI health literacy advisor to assist in development of the content of the video. The nurses on the 6A telemetry unit arranged follow-up appointments for patients at SHVI Interventional Clinic depending on their GRACE Score. This ensured that the patients had continuity of care in the SHVI Interventional Clinic and were seen in a timely manner.

Another strength of this project was that it had the support of the SHVI administration. The SHVI director of the cardiac catherization lab, the APP cardiology lead, and the administrator of clinical operations were committed to its implementation. The project lead coordinated with the SHVI office team to schedule the patients' appointments with the project lead's clinical schedule.

Weaknesses

A weakness of the project was that since Atrium Health is a large tertiary center, some patients had to travel for several hours round-trip from where they reside for their

SHVI Interventional Clinic follow-up appointment. The patient may have incurred costs with travel and may have missed work. Therefore, they were referred to SHVI locations nearest to their homes after their initial SHVI Interventional follow-up appointment.

Opportunities

The project created an opportunity for the NSTEMI and STEMI patients at SHVI to become more informed. As a result, the patients may have improved population health outcomes. In addition, some of this patient population were members of the PFAC. This is an example of external opportunity for the patients to give input to SHVI administration for quality improvement. The PFAC patients evaluated the video content and provided constructive feedback to the project coordinator at their monthly meeting.

Threats

Internal threats to the success of the project included patients that were overwhelmed with their new diagnosis and may not have been motivated to learn. As a result, they may have declined to participate. The project coordinator worked closely with the interprofessional team of RNs including 6A nurses, AMI nurse navigators, APPs and MDs to promote the project.

SWOT Analysis

Strengths	Weaknesses	Opportunities	Threats
Interprofessional Collaboration between SHVI team and PFAC Committee	Patients travel distance f/u SHVI appointment Money, gas, time off work	Patients become more informed Improve patient outcomes	Patients overwhelmed by new diagnosis Decreased readiness to learn

Data Collection and Measurement Tool

The questionnaire was developed from the Ask Me 3®, (IHI, 2015). This teaching tool prompts patients, along with their caregivers, to inquire about identified knowledge deficits with a medical professional to enhance their understanding of their health conditions and self -care instructions. This instrument was designed by health literacy experts to engage patients in their health care and to improve communication between the patient and their health care team. The project coordinator saw the patients in the hospital as well as in the SHVI Interventional Clinic as the APP. Demographic data was also collected by the project coordinator described under method of data collection and entered in spreadsheets.

The questionnaires were completed in person. The questionnaire tool was comprised of nine questions to test the patients' comprehension of self-care activities. The Ask Me 3® tool, aligned with the goal and outcomes of the study, and served as a guideline for the development of the nine open ended questions. The intervention group was also queried if they viewed the video with anyone and the number of times they viewed it. A list of acceptable answers to each question was developed by the project coordinator and approved by an interventional cardiologist and the APP Cardiovascular Fellowship Director (Appendix A). The patients' scores on the post-test, as compared to the pre-test, were analyzed to determine if there was an association between the video instruction and improved knowledge related to self-care activities.

Method of Data Collection

The project coordinator randomized the patients to either the control or intervention group by rotating the enrollment. The project coordinator was the only provider administering the pre- and post- test to the patients and recording the data. The participants were assigned an identification (ID) number, and a master list of participants was created with their study ID. The master list was stored on the project coordinator's computer, which was password protected, and no one else had access to the data. The data collection tool did not contain identifying information and was stored on the project coordinator's Atrium password protected flash drive.

Project Analysis

Descriptive statistics were used for reporting frequencies and proportions for categorical variables; continuous variables were measured by mean, standard deviation, or median with an interquartile range. The demographic data of the patients in the intervention and the control group were measured by a Fisher exact test. Improved knowledge of the groups before and after the intervention were measured with a t-test. Alpha was set at 0.05 for all hypothesis testing. The SAS Interprise guide 7.4 was used for analysis. In sum, the data analysis assisted the project coordinator in determining if the intervention of the post-MI video was statistically significant when compared to only the standard discharge teaching with a booklet titled "Heart Attack: Bouncing Back" (Pritchett & Hall, 2017).

A data codebook was created that included the name for each data item, its level of measurement and its numeric coding scheme. An example would be for gender, which is

a nominal level variable, for which “1” would designate female and “2” would designate male (Mora n et al., 2017). In addition, a code for missing data was developed.

CHAPTER 4: PROJECT FINDINGS/RESULTS

Sample Size and Demographic Information

This project was conducted from October 2019 to December 2019. A total of 28 patients were enrolled. There were three patients who completed the pre-test, but did not follow up in the SHVI Interventional Clinic with the project coordinator after their discharge. One of the patients was seen previously by a cardiology practice outside the Atrium system and, ultimately, chose to stay with that practice. The remaining two patients did not respond to the project coordinator when contacted after missing their appointments. In total, there were 25 project participants, 12 in the control group and 13 in the intervention group.

Demographic data was collected from project participants on the following items: gender, age, education (less than college, college or more), income (less than $50,000, or greater than $50,000), married (or have a partner) or single, and family history of premature coronary artery disease. These variables were compared between the intervention and control groups to determine if there were any significant differences between the groups. One demographic categorical data, age, differed significantly between the intervention and control group ($p=0.0488$).

In the control group, 67 % were male and 33 % were female. In the intervention group, 69 % were male and 31% were female. The mean age of the participants in the control group was 63.5 years and the mean age of the intervention group was 54.6 years. In the control group, 75 % of the participants had a high school education or lower and in

comparison, 61.5 % of the intervention group had a high school education or lower. The majority of participants earned less than $50,000. Forty-two percent of the control group was married (or had a significant other), compared to 61.5 % of the intervention group who had life partners. The participants' family history of premature coronary artery disease consisted of 58% of the participants in the control group, and 46 % in the intervention group. A Fischer exact test was used for comparison of the categorical variables. Demographic data and between group comparisons are presented in Table 1.

Table 1. Demographic Information

	Control Group (n=12 (48%))		Intervention Group (n=13 (52%))		Total Participants (N=25)		p-Value
	n	%	n	%	n	%	
Gender							1.0000
Male	8	66.7%	9	69.2%	17	68.0%	
Female	4	33.3%	4	30.8%	8	32.0%	
Age (Mean (STD))	63.5 (11.1)		54.6 (10.2)				0.0488
Age (Min-Max)	48-80		36-67				
Education							0.6728
Less than College	9	75.0%	8	61.5%	17	68.0%	
College or more	3	25.0%	5	38.5%	8	32.0%	
Income							0.7896
< 50K	8	66.7%	8	61.5%	16	64.0%	
>= 50K	4	33.3%	5	38.5%	9	36.0%	
Marital Status							0.4338
Married	5	41.7%	8	61.5%	13	52.0%	
Single	7	58.3%	5	38.5%	12	48.0%	
Family History							0.6951
Yes	7	58.3%	6	46.2%	13	52.0%	
No	5	41.7%	7	53.8%	12	48.0%	

Data analysis

Data were analyzed using the SAS Enterprise guide 7.4. A Wilcoxon rank sum test and t-test were both analyzed on the continuous variable of score, since the sample size was small, with the same results. The mean pre-test score for the control group was 6.0 and the mean post-test was 6.2. The mean change in score from pre-test to post-test was 0.17. The mean pre-test score of the intervention group was 5.5, and the mean post-test score was 7.1 which was a mean change in score from pre-test and post-test of 1.5.

Only the intervention group showed a statistically significant increase (p value = 0.0056). Figure 1 illustrates the difference in pre-test and post-test scores between the control and intervention groups.

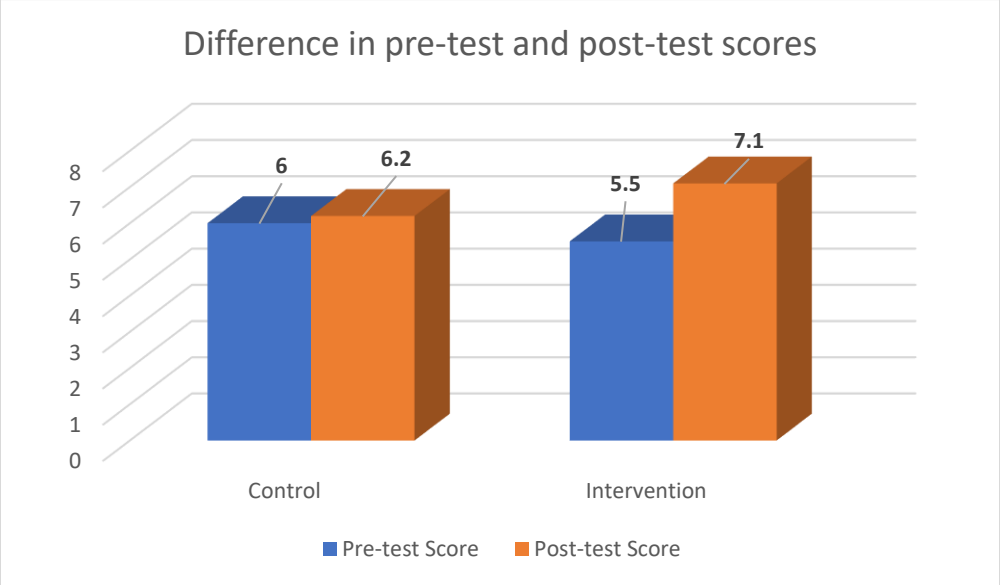

Figure 1. Difference between pre-test and post test scores

CHAPTER 5: DISCUSSION

Existing literature on heart failure patients and the use of patient education videos in conjunction with a standard teaching booklet demonstrates that use of audio-visual material augmented patients' knowledge retention, thus enhancing self-care (Albert, Buchsbaum & Li 2007; Boyde et al., 2018, & Veroff et al., 2015). In this pilot study, a post-MI educational video was used in the intervention group to similarly enhance patients' knowledge retention of post-MI self-care activities. Patients in the intervention group viewed the video an average of 1.76 times. Additionally, patients in the intervention group demonstrated a statistically significant increase in knowledge of self-care activities demonstrated on their post-test. The increase in knowledge from pre-test to post-test was significantly greater than the increase in knowledge observed in the control group.

The results of this project are especially meaningful for the care of post-MI patients. These patients are traditionally educated on self-care activities soon after their MI, and prior to discharge from the hospital. Following a MI, patients may be overwhelmed by this life-altering event, they may still have pain, and may need additional time to process the educational material. As a result, patients may not understand or retain everything they are taught immediately post-MI. The use of an educational video allows patients to access information when it is most convenient for them. The results of this project, while conducted with a small sample size, show a promising method to augment education patients currently receive in the hospital.

It is important to note that over half of the participants in the combined groups had a significant other with 61.5% of the intervention group viewing the video with a support

person or caregiver. Therefore, there is a high probability that patients with a strong support system would view the video multiple times and be more receptive to the education, and thereby, increase their knowledge and understanding of self-care activities following a MI.

Limitations

Limitations of this pilot project include the small sample size and traveling distance. The project coordinator's goal to enroll 30 participants was more challenging than anticipated; therefore, the sample size only included 25 patients. This project was piloted in a large, urban tertiary care center, and many of the patients were transferred from smaller hospitals within the region. The traveling distance was a barrier with the majority of patients preferring to arrange their hospital follow-up appointments closer to where they resided. In order to recruit additional patients, the project coordinator informed the patients that following their first follow-up, appointments would be arranged at the cardiology office closest to their home. To accommodate additional patients, the enrollment period was expanded for recruitment, spanning two months in duration.

In addition, there was a significant difference in the mean age of patients in the control versus the intervention group. The mean age of the control group was 63.5 years and the mean age of the intervention group was 54.6 years, with an 8.9-year age variance. Age may be a confounding variable in this study. Younger patients may prefer video education to the traditional booklet. An additional study, with a larger sample size, is needed to determine whether the improvements observed are due to the intervention rather than other factors.

Impact on Practice

This pilot project has the potential to change current practice by allowing clinicians to include video education with the current standard teaching booklet. The post-MI video is unique; it provides simple, succinct instructions and may be viewed as many times as the patient prefers during the post-MI recovery period. The use of the post-MI video could improve a patient's knowledge of self-care activities and, in turn, enhance their overall cardiovascular health.

Multiple aspects of this project benefited from interprofessional collaboration. The project coordinator met with the health literacy representative of the hospitals' Cardiovascular Patient & Family Advocate Committee to determine if the video was developed at the appropriate educational grade level for all patients. In addition, the project coordinator worked closely with the APP Cardiovascular Fellowship Director and an interventional cardiologist in the development of a 9-item, open-ended questionnaire, the pretest, and the post-test. Further, the project coordinator met with the cardiovascular group's administrative team to arrange the patients' hospital follow-up appointments.

Additionally, the pilot study's project coordinator currently serves at the APP State Liaison for the North Carolina Chapter of the American College of Cardiology (ACC). The ACC's Cardio-Smart ™ website currently does not have a post-MI video similar to the one produced for this project. This video has the potential to be added to the ACC Cardio-Smart ™ educational video library for patients.

Recommendations

During project implementation, the project coordinator personally met with participants during their hospitalization as well as with their providers in the outpatient

follow-up clinical setting. In the future, this pilot project could be expanded to include additional providers at various locations within this cardiovascular group to determine if comparable results of an increase in patient knowledge are also seen. Expanding this intervention across multiple practice sites may assist providers in more effectively educating patients and improving patients' knowledge of self-care activities post-MI.

If this pilot study were repeated, tablets should be made available for patients to view the video while waiting to be seen at their office visit. Showing the educational video on tablets may reinforce the patient's knowledge of critical self-care activities following a MI. Further, using tablets will allow the patient to review educational materials and test their understanding of the three primary questions in the video: "What is my main problem? What do I need to do? Why is it important for me to do this?" If the patient identifies any of the three questions they cannot answer, they are better prepared to discuss this with their provider.

Moving forward with the dissemination of this project, the project coordinator will submit an abstract to the ACC for consideration for poster presentation for the APPs at the ACC 2020 National Meeting. An article will also be submitted for publication to the ACC journal. If one or both are accepted, this would enable the project coordinator to disseminate the findings with other cardiology practices nationally and internationally. The project coordinator can serve as a resource for other APPs on the process of video production to enhance self-care for the post-MI population.

This video was produced in conjunction with the University of North Carolina at Charlotte. It was incorporated into the coursework of the Adult Gerontology Acute Care Nurse Practitioner Program where the project coordinator serves as Adjunct Faculty. The

video demonstrated how to bolster patients' learning by engaging them in multiple modes of learning. There were no costs associated with production of the video because it was used within the classroom to educate students. Future recommendations include incorporating similar videos into the graduate curriculum to demonstrate various teaching methods.

Summary

In summary, the project coordinator formulated the idea for this project after discussing the problem with an APP colleague who spent much of their time reiterating the post-MI discharge instructions for patients in the follow-up clinic. In order to improve the health of cardiovascular patients following a MI, patients must participate in medical decision-making and self-management. Engaging patients in their self-care activities is paramount to improving patient outcomes and reducing readmissions related to poor self-care.

The education materials provided to post-MI patients in this study consisted of a 48-page booklet and education videos during hospitalization. Within the existing set of educational videos, there was not a designated video detailing the instructions for self-care that was accessible after hospital discharge. This pilot project demonstrates an improvement in knowledge following implementation of a video intervention in addition to the standard written education materials. Although promising, further studies should expand enrollment to determine if similar results are found.

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Appendix A: Questionnaire

You were recently hospitalized for a heart attack. This heart problem was caused by:
0 – blockages in coronary arteries
1 – coronary artery disease
2 – plaque build up
3 – plaque rupture

When eating at a restaurant list a food choice that you know you would look for to eat as part of a heart-healthy diet.
0 – salad
1 – baked chicken or fish
2 – vegetables
3- fruit

One of the medications you are taking for your heart is a baby aspirin. How long will you be taking this medication?
0 – forever
1 – the rest of my life

Another medication you are taking following your heart attack is called a statin. Why is this medicine important for you to take?
0 – to prevent plaque buildup or worsening of CAD
1 – prevent another heart attack or myocardial infarction (MI)

If you are scheduled to have surgery, you may need to have your aspirin and other medications held. Who should you contact before holding any medications?
0 – Contact my heart team (includes RN, advanced practice provider)
1 – Contact my heart physician
2– Contact my physician

A cardiac rehab nurse came to see you before you were discharged home from the hospital. Why is it important for you to routinely go to cardiac rehab following your heart attack?
0 – learn more about my heart and what to do to keep myself healthy
1 – have supervised exercise
2- meet other patients and learn from/with them (PFAC committee members said this was best part)

Exercise is important to help keep your heart healthy. How often should you be exercising each week?
0 – 5 out of 7 days for 30 minutes at a time
1- any combination to total 150 minutes weekly

In addition to your aspirin, you are on another antiplatelet medication. What is the name of this medicine?
0-Plavix or Clopidogrel
1-Brilinta or Ticagrelor
2-Effient or Prasugrel

Medicines, diet and exercise are all important to prevent another heart attack. List a risk factor you have that places you at risk for another heart attack.
0-smoking
1-hypertension or high blood pressure
2-diabetes, or high sugar
3-dyslipidemia or high cholesterol
4-overweight, obese, fat
5-lack of exercise or no exercise, sedentary lifestyle
6-not following Mediterranean diet, eating junk food or fast food, eating fried foods

How many times did you watch the video?

Did a friend, caregiver, or family also watch this video?
If so, how were they related to you?

Appendix B: Video Script

Greeting: Hello my name Amy. I am a nurse practitioner at SHVI. Sometimes I'm called an Advanced Practice Practitioner or (APP).
Objective: This video will teach you how to care for yourself at home. You play an important part in your healing and recovery by participating in your care.
After watching this video, should be able to answer these 3 questions:
What is my main problem?
What do I need to do?
Why is it important for me to do this?

You have been treated for a heart attack, which is also called a myocardial infarction. You have coronary artery disease. I want to show you a model of your heart (*show model of heart).* This is the front part of your heart, your left main coronary artery. It has 2 main branches off it, the left anterior descending and circumflex. In the back portion of your heart, is your right coronary artery. It also has several branches off it. Your heart attack was caused by plaque buildup. I want to show you a model of your coronary artery. This is a normal coronary artery, this has some plaque in it, and this is stenosis or a buildup of plaque. (Show plaque model while stating above). Plaque is sticky stuff that sticks to your arteries.
The doctor may have opened up your artery with a heart stent. Insert slide of short clip of stent.

There are things you can do to stop the plaque from coming back or getting worse. These life changes will help make your heart healthier.

1. Eat Healthy (*show pictures foods on and discuss the Mediterranean diet*). You want to follow a Mediterranean diet. This diet is high in green leafy vegetables, fruit, salad and nuts, and you cook in olive oil. Also, eat lean meats such as chicken or salmon.
2. Take medicines as prescribed. Some of these medications may be a beta blocker that protects your heart and decreases your heart rate and your blood pressure. A statin decreases your cholesterol and lowers your bad cholesterol which is your LDL. The baby aspirin and anti- platelet medication keeps the platelets from sticking together. Never stop your anti-platelet without talking to your heart care team.
3. Go Cardiac Rehab. I want to share a personal story about my 87 year old mother with a pacemaker. She attends cardiac rehab to keep her physically strong. Also, my 78 year old father in law recently had a heart attack. I encouraged him to attend cardiac rehab instead of his local gym. He called me after the first time he attended and he thanked me, he loved it. At Cardiac rehab you will have a healthcare team to help you with exercise, answer questions about your eating

habits, and support you while you recover. You will meet other heart patients that share your life experience who you can develop friendships with.

4. If you smoke, you will need to quit. If you need help tell your health care team. Smoking can block your coronary arteries. You can call
   1-800-QUIT now to help you.
   The phone number is 1-800-784-8669.
5. Write down questions to ask your care team.
6. Tell you care team when you don't understand.
7. Make sure you attend your regular follow up appointments.
8. If you have problems, you can call your heart doctor, or nurse with questions.

   Here are some reasons to call:

- Chest pain
- Feeling short of breath
- Blood in your stool or urine (which is your pee)
- Questions about medicines
- Dizziness or lightheadedness

Call 911 if:

- You were prescribed nitroglycerin and have chest pain that doesn't go away after taking it.

Now that I've talked about your main problem and what you need to do, here's why it is important. Making these changes to your daily living will help keep your heart healthy. You have experienced a stressful health issue. It will take some time to heal and get back to your best life. These tools will help you take better care of your heart. Watch this video as many times as you can to remind you of what you need to do. Share it with your family and caregivers so they can help you along your healing journey.

To summarize what we talked about today,

What is my main problem?
You have coronary artery disease

What do I need to do?

1. Eat healthy
2. Take medications as prescribed
3. Attend cardiac rehab
4. Quit smoking
5. Write down questions to ask
6. Tell your or care team if you do not understand
7. Attend follow up appointments
8. If you have problems: call

Why is it important for me to do this?

Making lifestyle changes will help keep your heart healthy and live your best life.