# Implementation of an Ask Me 3 ® education video to improve outcomes in post-myocardial infarction patients

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## ARTICLE INFO

## ABSTRACT

Objective: The Advanced Practice Providers (APPs) in 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 an Ask Me 3 ® post-MI education video on patients' knowledge of self-care activities. The video was designed to promote secondary prevention of cardiovascular disease and support optimal cardiovascular health.

Methods: The project used a pre-test post-test quasi-experimental design to evaluate the feasibility and efficacy of a post-MI education video compared to the standard teaching methods.

Results: The sample consisted of 25 total participants, 12 in the control group and 13 in the intervention group. The increase in the intervention group's post- test scores was statistically significant (p value = 0.0056), showing a vast improvement in knowledge with the addition of an "Ask Me 3" education video.

Conclusion: An "Ask Me 3" post-MI education video may effectively improve cardiovascular secondary prevention when incorporated with the standard teaching methods. Patients may view the video multiple times, enhancing their knowledge of lifestyle modifications following hospitalization and their overall cardiovascular health.

Cardiovascular disease is the leading cause of death worldwide. [1] Health care providers' efforts towards primary and secondary prevention have the potential to reduce cardiovascular morbidity and mortality following a myocardial infarction (MI). After a MI, patients must adapt their lifestyles to prevent secondary complications. A barrier to this is that post-MI patients often feel overwhelmed by newly recommended cardiovascular lifestyle modifications. [2-4] The literature supports the use of video education, in addition to the standard teaching for patients with cardiovascular disease, to increase self-care behaviors including smoking cessation, daily weight monitoring, and the adoption of a low-sodium diet. [5,6] One study [6] reported that the promotion of self-care activities lowered the risk of readmission by 30% within 12 months. Incorporating evidence-based interventions such as video technology can improve self-care and secondary prevention for post-MI patients. The framework for this education video was based on the Institute for Healthcare Improvement's (IHI) Ask Me 3 ® education program.

[7] Ask Me 3 ® is a validated teaching tool created by health literacy experts to prompt patients and caregivers to ask specific questions regarding their treatment plan to enhance their understanding of their health conditions and self-care needs. [7] The questions addressed in this tool include:

1 What is my main problem?
2 What do I need to do?
3 Why is it important for me to do this?

## Methods

This pilot project used a pre-test/post-test quasi-experimental design to evaluate the efficacy and feasibility of a post-MI education video in addition to standard teaching methods. The video incorporated Ask Me 3 ® content [7] for patients hospitalized following a ST-Elevation Myocardial Infarction (STEMI) or Non-ST-Elevation Myocardial Infarction (NSTEMI). The intervention was implemented over a 2-month period

for all STEMI and NSTEMI patients within 24 hours of their hospital discharge. Prior to implementation, the project was approved by the hospital's Institutional Review Board and was identified as a quality improvement project. Patients were informed of the project by the project coordinator; however, a signed consent was not required.

The standard education provided to all patients is a 48-page booklet. The booklet includes information on the definition, diagnosis, and treatment of cardiovascular disease along with risk factor modification. The video was created to supplement and reinforce the topics covered in the standard booklet.

With input from members of the interprofessional team, the project coordinator developed a 7-minute video at a sixth-grade reading level. (The following is supplementary data to this article: https://bit.ly/33fp1MM ). The education video was approved by the hospital's Cardiac Patient and Family Advisory Council (PFAC). The video incorporated education on coronary anatomy and secondary prevention of cardiovascular disease including the Mediterranean diet, exercise recommendations, cardiac rehabilitation, and the importance of evidence-based medical therapies. The video was based on the Ask Me 3 ® program and the three questions: "What is my main problem?", "What do I need to do?", and "Why is it important for me to do this?"[7] The video was designed to accommodate different learning styles by providing real-life examples and 3-dimensional heart models along with a simple, concise overview of the patient's diagnosis and self-care activities to promote cardiovascular health.

The project was conducted from October 2019 to December 2019. The project coordinator enrolled 25 participants. Inclusion criteria included patients admitted for a NSTEMI or STEMI with no prior history of a MI, 35 years of age or older, English speaking, and patients with access to a computer or smart phone. Exclusion criteria included patients who were non-English speaking, did not have access to a computer or smart phone, and patients who have a diagnosis of dementia. Participants were randomized into 2 groups: 13 in the intervention group and 12 in the control group. Participants were chosen at random by sequentially alternating the enrollment. The mean age of the participants in the intervention group was lower, differing from the control group by 8.9 years. The intervention group was given the education video in addition to the standard education given in the hospital. The control group received only the standard education. The video was introduced to the post-MI patients prior to their discharge. The video was shown on an iPad while in the hospital, and patients were given a website hyperlink by the project coordinator to view the video following 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 cardiology interventional clinic within 3 to 10 days. [8]

To assess the impact of the video education, a 9-item pre/post questionnaire was developed. The questions assessed knowledge of self-care activities, treatment recommendations, and cardiovascular medications. All questions were fill-in-the blank. A list of acceptable answers was created to determine the participants' knowledge of self-care. A health literacy advisor reviewed the questionnaire setting it at a sixth-grade reading level (Fig. 1). The questionnaire was reviewed for accuracy of content by an interventional cardiologist and the Advanced Practice Provider (APP) Cardiovascular Fellowship Director. The project coordinator administered the pre-test to the intervention and control groups prior to hospital discharge. The project coordinator also administered the post-test at the outpatient cardiology follow-up visit.

## Results

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. 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.

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 group to determine if there were any significant differences between groups. Age was the only variable that differed significantly between the intervention and control group (p=0.0488). 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.

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. The participants' family history of premature coronary artery disease consisted of 58% in the control group, and 46 % in the intervention group. A Fischer exact test was used for comparison of the categorical variables in the intervention and the control group (Table 1).

Data were analyzed using the SAS Enterprise guide 7.4. Since sample sizes were small, a Wilcoxon rank sum test was performed along with a t-test to assess group differences in pre- and post-test scores. The results were the same in both tests. The mean pre-test score for the control group was 6.0, and the mean post-test score was 6.2, with a mean change in score from pre-test to post-test of 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 of 1.5 from pre-test to post-test. The change in score from pre- to post-test between intervention and control group was statistically significant (p=0.0056) with intervention group showing greater increase in knowledge from pre-test to post-test. (Fig. 2). However, given that there was a significant difference in mean age between the intervention and control group, an age-adjusted generalized linear model analysis was performed to compare the change in score between intervention and control groups. In adjusted model, age was not a statistically significant term and did not attenuate the differences in change scores between the groups (p=0.6890). Even after adjusting for the age, compared to control group, intervention group had significantly greater increase in score from pre- to post-test (0.12 vs 1.6 respectively; p=.0080).

## Discussion

The purpose of the project was to determine if a video, based on Ask Me 3®, may enhance patients' knowledge of self-care, thereby, improving secondary cardiovascular health. [5,6] The findings of this pilot project support existing literature regarding the use of patient education videos in conjunction with standard teaching methods to improve patients' knowledge. [5,6] Patients in the intervention group viewed the video an average of 1.76 times and demonstrated an increase in knowledge of self-care activities. The increase in knowledge from pre-test to post-test was significantly greater in the intervention group than that of the control group.

The results of this project are especially meaningful for the care of post-MI patients. Post-MI patients are traditionally educated on self-care activities soon after their MI, and prior to discharge from the hospital, with an average stay of 48 hours. Following a MI, patients are overwhelmed by this life-altering event; they 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. An education video allows patients to access information when it is most convenient for them. In addition, framing the content of an education video with the Ask Me 3 ® questions improves patient communication

1. You were recently hospitalized for a heart attack. This heart problem was caused by:

   _____

2. When eating at a restaurant list a food choice (and how it is cooked) that you know you would look for to eat as part of a heart-healthy diet.

   _____

3. One of the medications you are taking for your heart is a baby aspirin. How long will you be taking this medication?

   _____

4. Another medication you are taking following your heart attack is called a statin. Why is this medicine important for you to take?

   _____

5. 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?

   _____

6. 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?

   _____

7. Exercise is important to help keep your heart healthy. How often should you be exercising each week?

   _____

8. In addition to your aspirin, you are on another antiplatelet medication. What is the name of this medicine?

   _____

9. 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.

   _____

10. How many times did you watch the video?

   _____

11. Did a friend, caregiver, or family also watch this video?

   _____

12. If so, how were they related to you?

   _____

**Fig. 1.** Questionnaire

**Table 1**

Baseline Characteristics of the Study Population and Pre- to Post- Test Scores, Categorized by Control, and Intervention Group.

| | Control Group (n=12 (48%)) | | Intervention Group (n=13 (52%)) | | Total Participants (N=25) | | |
|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | p-Value |
| 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) | | 59.8 (10.7) | | **0.0488** |
| Age (Min-Max) | 48-80 | | 36-67 | | 36-80 | | |
| 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% | |
| Pre-test Score (Mean (STD)) | 6.0 (1.5) | | 5.5 (1.9) | | | | 0.513 |
| Post-test Score (Mean (STD)) | 6.2 (1.7) | | 7.1 (1.6) | | | | 0.188 |
| Change in Score from post- to pre-Score (Mean (SD)) | 0.17 (1.0) | | 1.5 (1.2) | | | | **0.0056** |
| Age-adjusted change in Score from post- to pre-Score (Mean (SD)) | 0.12 (1.1) | | 1.6 (1.2) | | | | **0.008** |
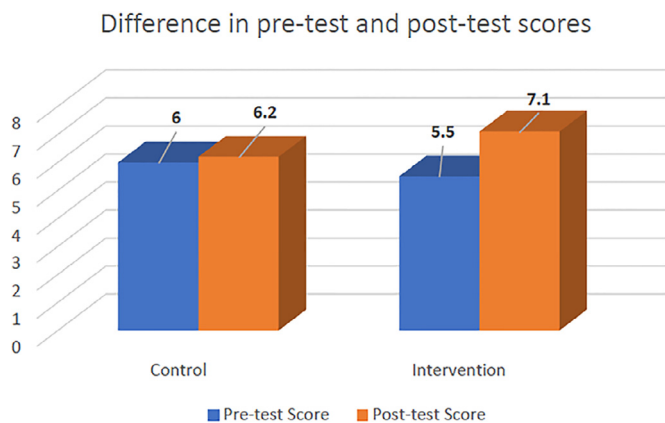


**Fig. 2.** Difference between pre-test and post-test scores

with the interprofessional healthcare team; it also empowers patients and families to assume an active role in their care. [7] Further, 61.5% of the intervention group reported viewing the education video with a spouse 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, increasing their knowledge and understanding of self-care behaviors as well as other secondary prevention activities.

Limitations include the small sample size and traveling distance. Recruitment was a challenge due to traveling distance to the outpatient cardiology clinic. This project was piloted in a large, urban quaternary care center, and many of the patients were transferred from smaller hospitals within the region. Those patients traveling greater distances to follow-up office visits preferred to arrange their appointments closer to their home. In order to retain those patients, following their first follow-up, appointments were arranged at the cardiology office closest

to their home. To recruit additional patients, the enrollment period was extended, spanning 2- months in duration.

In addition, there was a significant difference in the mean age of patients in the control versus the intervention group. Age may be a confounding variable in this study. Younger patients may prefer video education as opposed to the written materials traditionally used. Rosdahl and colleagues [9] conducted a retrospective study evaluating learning preferences of ophthalmology patients and found similar results with younger patients using the Internet as a resource to gain knowledge. A follow up study, with a larger sample size of STEMI and NSTEMI patients, is needed to determine whether the improvements observed are due to the intervention rather than other factors.

This pilot project has the potential to change current practice by enhancing the current standard teaching methods with the addition of Ask Me 3 ® video education. The post-MI video is unique; it provides simple, succinct instructions and may be viewed repeatedly 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. [5,6]

Multiple aspects of this project benefited from interprofessional collaboration. The project coordinator met with the health literacy representative of the hospitals' PFAC committee to determine if the video was developed at the appropriate education 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 for the participants' pre/post-test. During project implementation, the project coordinator personally met with participants during their hospitalization as well as with their providers in the outpatient clinical setting.

In the future, this pilot project will 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 observed. 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. Future studies

will also measure additional baseline factors such as race, smoking status, diabetes, hypertension, and atherosclerotic cardiovascular disease (ASCVD) scores to determine a difference in adherence and outcomes following this education intervention. Future studies will follow participants for several years to determine if the education intervention improved adherence to medications and reduced repeat ASCVD events. A larger, full-scale study will also focus on enhancing patient access to the education video. Tablets will be available in the waiting room for patients to view the video at their follow-up office visit. Any of the Ask Me 3 ® questions that the patient cannot answer will be addressed with their provider during the visit.

To improve the health of cardiovascular patients following a MI, patients must actively participate in medical decision-making and self-care management. Engaging patients in self-care activities is paramount to improving patient outcomes and reducing readmissions related to poor self-care. This pilot project demonstrates an improvement in knowledge following implementation of Ask Me 3 ® video education in addition to the standard teaching methods. Further studies should expand enrollment to determine if evidence-based interventions such as Ask Me 3 ® video education improves secondary cardiovascular prevention for post-MI patients.

## Supplementary material

Video AJPC Winiger.docx
Video Script AJPC Winiger.docx
Video still AJPC Winiger.docx

## Author contributions

Amy Winiger: Conceptualization, Writing – original draft preparation, Methodology, Statistical analysis, Project administration, and Visualization.

Katherine Shue-McGuffin: Conceptualization, Methodology, Writing – Review & Editing, Visualization, and Supervision.

Ashley Moore-Gibbs: Conceptualization, Methodology, Writing – Review & Editing, Supervision.

Kathleen Jordan: Supervision, Methodology, Writing—Review & Editing.

Anita Blanchard – Review & Editing.

## Author disclosures

Amy Winiger, Katherine Shue-McGuffin, Ashley Moore-Gibbs, Kathy Jordan, and Anita Blanchard declare that they have no relevant or financial interests that relate to the research described in this manuscript.

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## Declaration of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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## Supplementary materials

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.ajpc.2021.100253.

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