Improving Patient Satisfaction Using a Video-Based Patient Education Platform

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Abstract. Patient education is a critical component in a patient's preparation for, and recovery from, a medical procedure. The research team utilized a novel approach in the development and presentation of patient education material in an effort to address gaps between health education and patient health literacy and to utilize the flexibility of technology in disseminating health education. Patient and healthcare provider responses were collected and analyzed to determine the feasibility of using this approach to create future education. Overall responses to the ease of use and educational experience of the patient education center were positive.

Keywords: Patient education · E-learning

1 Introduction

A patient's ability to understand and recall medical information is an important component of successful outcomes, and there is a current need to improve health literacy and memory among all patient populations. Health literacy is "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" [1]. Low health literacy has been consistently associated with poorer health outcomes and poorer use of healthcare services [2–5]. Additionally, the ability to recall medical information after leaving the hospital or doctor's office can be a challenging task, especially for older adults. Previous studies report that patients of all ages remember between 17.1% and 60% of the medical information their doctor provides [6–11]. One of these studies focused on middle-aged and older adults and found that the total recall of given information was only 40%, and of the 40% that is recalled, almost half of the information is recalled incorrectly [7].

One avenue for addressing the outcomes impacted by health literacy is through the use of patient education. Patient education is a critical component in a patient's preparation for clinical procedures, as well as recovery following those procedures [12–15]. Additionally, educated patients are more likely to use preventative services, manage their condition, and are less likely to be admitted to the hospital unnecessarily [16–20]. Unfortunately, despite the recognized benefits of effective patient education,

many patient facing materials available contain content that exceeds the recommended literacy levels for patient education [21–23].

While standardized written and verbal forms of education for patients can provide the basic information necessary, web-based technologies give patients the flexibility to view and interact with educational material how, when, and where they want. This flexibility can help address the issue of patients' poor memory for health information by serving as an external memory or performance support tool that can be used to recall the necessary information exactly when it is needed.

In addition to the flexibility in access provided by web-based technologies, they also provide a certain level of educational flexibility in the creation of the patient education content. This is of particular interest when providing information to patients about an upcoming medical procedure. Effective education has a wide variety of objectives including the provision of information about how to prepare for the hospital, what to expect when you are at the hospital, what the procedure is, the risks and benefits, and how to care for yourself when you go home. This variation in educational objectives necessitates more than the one-size-fits-all approach that is provided in most written and video based patient education materials. Instead, the design of patient education should attempt to match the format and style of the education to the particular objective that the materials are trying to achieve.

Previously, this matching has been difficult because patient education materials have been constrained by the delivery format available to healthcare systems (i.e., handbooks, pamphlets, DVDs). With the advent of online video platforms and the prominence of ultra-short form videos (i.e., microlearning), it is now possible to create short pieces of educational content that are designed to address a given educational objective (e.g., how to care for your procedure site) and that can be combined into an accessible online educational experience.

This current study describes research around the development of a new style of educating patients that combines microlearning videos with a web-based platform to create patient education experiences for acute medical procedures. Given the novel nature of this educational approach, the first step in evaluating this solution was to determine whether patients and clinicians would like education created in this way and integrate it into the overall medical procedure experience.

2   Methods

2.1   Development of the Education

The development of educational content focused on capturing the crucial elements of the entire patient experience around undergoing a medical procedure, specifically a cardiac catheterization. Initial development of the educational content began with eliciting knowledge from Subject Matter Experts (SMEs) familiar with the medical procedure and the preparation and recovery process in this health system's procedure lab. SMEs shared their knowledge of the entire patient experience, from hospital arrival to discharge home and beyond. Detailed SME input regarding how a patient needs to prepare for their procedure, what the patient will experience while in the hospital, and

what the patient needs to do when they get home was incorporated into the content development. Additionally, SMEs provided the team with common questions patients ask, issues that most patients have, and issues that often lead to a patient returning to the hospital after their procedure.

Using the information gathered from the SMEs, the education development team created a detailed outline of content with achievable objectives and a clear intent supporting each piece of proposed content. Instructional designers with expertise in adult learning then created scripts for microlearning content (i.e., 30–90 s videos) that aligned with appropriate health literacy levels of the patient population, focusing on one or two objectives per script to keep the content short and concise. The goal for the education development team was to make each topic easy to search within the overall collection of videos.

The instructional designers and video production team collaborated to match the intent and feeling of the video with a production format that best suited the information, such as live video, animation, or a whiteboard-like graphic. The resulting content consisted of 28 videos that ranged from character based animations describing what to expect when you get to the hospital, to whiteboard style videos explaining the steps for caring for your procedure site, to live videos with real clinicians putting patients at ease about their upcoming experience. The final videos were reviewed by the hospital's patient and family advisory council to validate the content and usability of the platform.

2.2 Technology Platform

The education was hosted on a web-based patient education center (Mytonomy, Inc.) that was designed to provide microlearning-based patient education content. The research team collaborated with the developers of the online platform to design a user experience that would match the educational workflow of the medical procedure.

Below are two screenshots of the patient education center. Figure 1 displays the "After Discharge" section of the education content. The user can move between
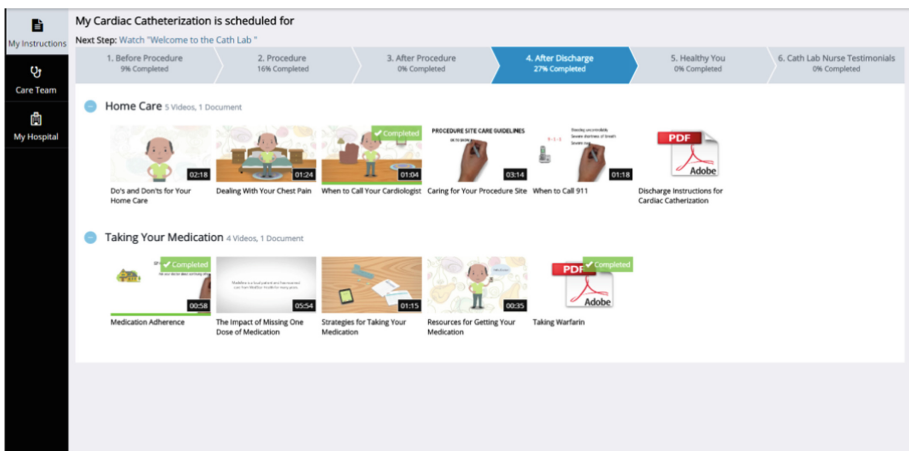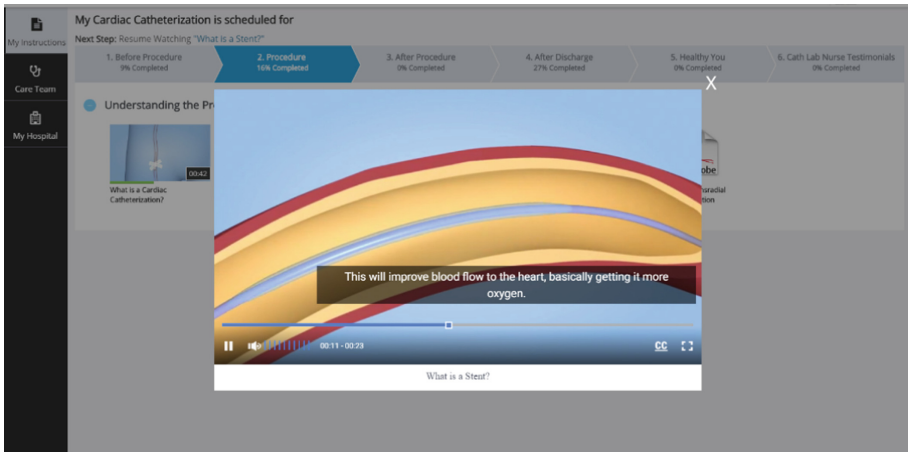

Fig. 1. Patient education center - section: after discharge

different content sections as they desire, but are visually cued as to which videos they've already watched and how much of each section they have completed. Figure 2 is an example of the video playback and closed captioning components of the education content.

Fig. 2. Patient education center – video playback

2.3   Procedure

The research team coordinated with the pilot hospital and staff members of the cardiac catheterization lab to identify the ideal location to integrate the patient education center into the clinical workflow. The majority of patients who consented to participate in the study received access to the education when they arrived for their procedure. In the hospital, patients were provided a tablet device and login information and were free to explore the content as they wished. A subset of patients was called by the hospital staff prior to their procedure and given access to the education content on their own internet connected device.

Nursing staff in the procedure lab encouraged patients to watch the pre- and post-procedure videos. Due to the nature of the clinical workflow, the patients often had more time to watch the videos following the procedure.

Members of the research team collected subjective feedback from the patients through a survey containing both quantitative questions in the form of a six-point scale ranging from 0 (strongly disagree) to 6 (strongly agree), and open-ended questions to capture qualitative responses. The survey consisted of questions regarding the patient's overall educational experience, as well as specific feedback on the platform's ease of use. The 20-question survey was administered to patients following 30 to 60 min of interaction with the patient education center, prior to the patient's discharge from the hospital.

Feedback from clinical providers regarding their impression of the content and its use in the procedure lab was collected at the end of the two-month pilot period.

3   Results

Over the course of a two-month period, 68 patients provided feedback on six survey questions related to their overall educational experience, and 29 patients provided feedback on fourteen survey questions related to the ease of use of the platform. Patient survey responses regarding both the overall educational experience and the ease of use of the patient education platform were overwhelmingly positive. As seen in Fig. 3, average responses to the six survey questions related to their educational experience ranged from a 5.5 - "I am confident that I understand how to care for myself as a result of the education" to a 5.75 - "If a friend needed to have the same procedure, I would tell them to go to this hospital".
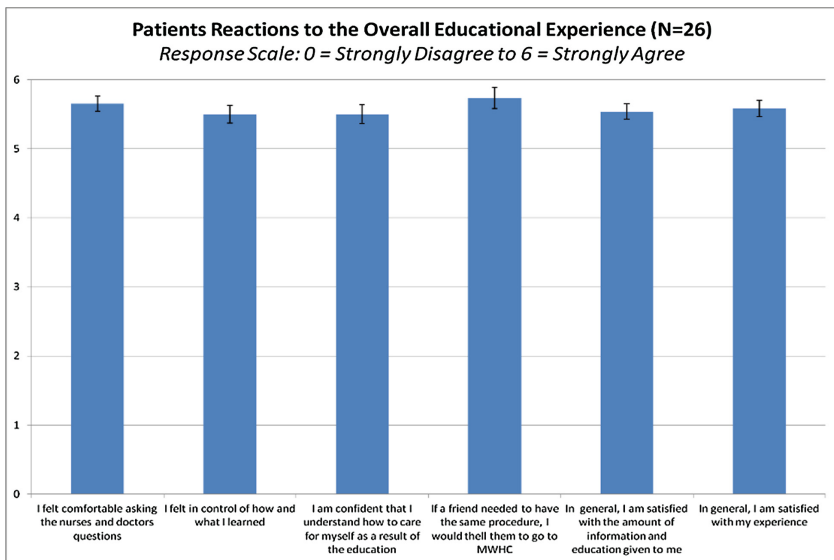
Fig. 3. Patient reactions to the overall educational experience.

Patient reactions to the ease of use of the platform are displayed in Fig. 4, below. Average responses to the fourteen survey scale response questions related to the use of the platform averaged between a 5.2 - "The Patient Education Center works the way I want it to work" and 5.6 - "I would recommend the Patient Education Center to a friend, if they were going to have this same procedure".

Additionally, 29 patients provided 37 free response comments that the research team analyzed for general themes. Nine patients reported that the education was informative, seven patients liked the education in general, and five patients praised the clinical staff. Four patients provided both positive and negative feedback on the usability of the education, and four patients commented positively on the ability to share the education with a family/caregiver. Three patients disliked the format of some
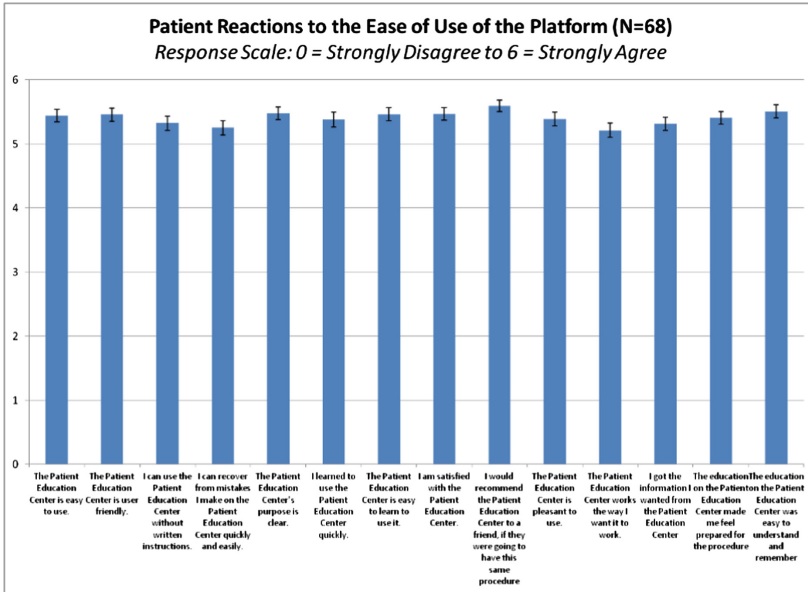
Fig. 4. Patient reactions to the ease of use of the platform

of the education, and one patient reported reduced anxiety because of their experience interacting with the education.

Eight members of the procedure lab nursing staff were surveyed to capture their impression of the education and how prepared and knowledgeable their patients were following the introduction of the education. The nursing staff expressed an appreciation for the concise, unique, and layman-focused content. Several nurses emphasized areas of improvement to make to the education regarding the accessibility for non-English speakers and the need to encourage the patient to watch the education content prior to arrival.

4 Conclusion

Patients had nearly universal positive responses regarding their interaction with the education content. They were generally enthusiastic about the technology-based style and content of the education, which is particularly important as the patient population included in this study consisted of primarily older adults who may be less familiar with this type of education delivery, but are more likely to have trouble remembering medical information. Nurses also had positive feedback for the education content, though highlighted areas of improvement for future iterations of the content and education delivery method.

One particularly important takeaway from the results is the patients' appreciation for the fact that the education could be shared with family members and caregivers. Often family members carry the burden of remembering their loved one's medical

information and the complex patient instructions following a procedure. During this pilot projects, family members watched the education while their patient family member was undergoing the procedure or sleeping in the post-operative care area. A major benefit of at-your-own-pace, technology-based patient education like that developed for this pilot is the constant accessibility of patient information to anyone involved in the patient's care in a variety of environments, both at-home and on-the-go.

The pilot program was a successful first step in improving both the content of important medical information provided to patients concerning a procedure, and the method in which patients learn from and interact with that information.

4.1 Limitations

A limitation of this study was the lack of comparative data regarding patient and clinical staff responses to education already in use in this pilot hospital. The focus of this pilot was to collect feedback about our unique education platform and content, but we recognize that it would strengthen the positive patient responses if compared to patients' feedback on current education, and this will be an area of future work.

4.2 Future Directions

Our pilot study intended to capture the feasibility of and reaction to a novel way to provide health education to patients. Future steps will be taken to determine if the innovative patient education platform and content improves health literacy and impacts outcomes. Additionally, we hope to test this approach with other types of education, such as chronic care management.

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