ORIGINAL ARTICLE

Engaging patients through an iBooks-based patient portal tutorial

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ABSTRACT

Introduction Patient portals or personal health records allow patients to access their health information and communicate with their physician's office outside of their clinic visit. As such, their use has been observed to increase patient engagement and decrease administrative costs. Despite these advantages, patient adoption and successful use of patient portals remains low. Here we assess the feasibility and efficacy of an iBooks-based tutorial in increasing comfort and compliance with personal health record use.

Methods We created and published a 5-min iBooks-based tutorial describing our institution's patient portal features. We administered the tutorial, along with presurvey and postsurvey, to ophthalmology clinic patients.

Results Of 70 participants, 50% had already registered for our institution's patient portal. Registered patients had viewed labs (74%, n=26) and messaged providers (57%, n=20) but rarely used other features such as scheduling appointments (17%, n=6) or requesting refills (26%, n=9). After the tutorial, comfort levels in knowledge on how to use portal features increased by 20%–80%, depending on portal feature and registration status. Main barriers to portal usage were preference for telephone-based communication (26%, n=18) and knowledge of portal existence (21%, n=15). The majority (86%, n=60) agreed the tutorial would increase their utilisation of the patient portal.

Conclusion Tutorials increase knowledge and awareness of patient portal features, allowing these features to be fully used. An iBooks-based approach allows patients to successfully access and use tutorial content outside of the clinic.

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INTRODUCTION

Patient portals or personal health records (PHR) were mandated in stage 2 of the Meaningful Use (MU) programme which was a key component of the Health Information Technology for Economic and Clinical Health Act of 2009.[1 2] MU requires the use of electronic health records (EHRs) to achieve the five pillars of health outcomes: improving quality, safety, efficiency, and reducing health disparities; engaging patients and families; improving care coordination; improving population and public health; ensuring adequate privacy and security for personal health information. The MU programme has already distributed $29.6 billion to providers who adopt EHR technology, and financial penalties will soon be applied to non-compliant providers.[3]

Typical portals allow patients to access, manage and share their health information through a safe, secure and confidential system.[4] The Patient Electronic Access objective of MU requires eligible professionals (EPs) to 'provide patients the ability to view online, download, and transmit their health information within 4 business days of the information being available.'[5] Specifically, by 2016, 50% of unique patients seen by the EP during the EHR reporting period must have been given this ability.[5] While Centers for Medicare and Medicaid Services only requires a single patient to have successfully accessed their health information in 2016, they require greater than 5% of patients to have accessed their health information in 2017, and these requirements are expected to become more stringent. Patient portals allow this aspect of MU to be achieved, while also allowing patients to undertake administrative tasks such as making appointments, ordering prescription refills and securely messaging healthcare providers, which are other required objectives for MU.[6]

Patient portals offer a number of benefits both to patient and provider. By

empowering patient participation in their own health management, they can increase patient engagement in their healthcare and decrease unnecessary use of healthcare services.[7] A recent systematic review which analysed 176 studies on the impact of providing patients with access to EHR showed that availability of health information and services through patient portals improved self-care and engagement with physicians and encouraged patient-led identification of medication errors.[8] Moreover, physicians' fear of increased workload due to patient portal use was largely unwarranted, and that there was no evidence for increased patient harm or privacy breach due to portal use. Patient portals were also found to reduce provider labour costs by streamlining activities such as prescription refills and patient education.[9]

While availability of patient portals has increased, uptake and successful use by patients remains a challenge. Ancker *et al* surveyed 800 adults living in New York city in 2013 and found that while 73% of providers offered patient portals, the utilisation was only 17%.[10] There are a number of factors resulting in low portal use by patients, including the 'digital divide' which has shown to impede access to in patients who have limited computer competency and poor health literacy.[11] Patient education is clearly an important step in uptake of patient portal use. A number of strategies have been used to improve portal use including promotional videos, posters and letter mailing.[12] In this study, we examined the effectiveness of an iBooks-based video tutorial in improving patient knowledge and competency in using our institution's patient portal.

METHODS

Creation of tutorial

The video tutorial comprised six chapters, and was created in February 2016. These modules included step-by-step instructions on: 'How to sign up and log in to MyChart', 'How to access your health information', 'How to view your laboratory results', 'How to request medication refills', 'How to schedule an appointment with your provider' and 'How to securely message your provider' (see online appendix figure). In each chapter, the viewer could watch a step-by-step video recording of the various tasks with narration by a voice artist. The video was a continuous recording of the screen while pointer directed clicks went through a sample PHR. The video and audio files were combined by using Camtasia and published through Macintosh iBooks with the help of our institution's Office of Medical Informatics, making it available free of charge to any user. The iBooks interface allowed patients to easily scroll from page to page, focusing on sections of interest and can be accessed anywhere using an iPad or mobile device.

Tutorial validation

Approval for this study was obtained by our institution's institutional review board. We prospectively evaluated our iBooks-based tutorial between February and April 2016 using presurvey and postsurvey. The study was conducted in an ophthalmology clinic at a large city hospital, which uses Epic MyChart as its patient healthcare portal. We surveyed a convenience sample of English-speaking patients in the ophthalmology clinic waiting room prior to their visit. Patients were approached prior to eye dilation to prevent any difficulties in viewing the tutorial or surveys. The choice to pilot this tutorial in the ophthalmology clinic was based largely on researchers' affiliation with the Department of Ophthalmology at our institution. Participants were adult patients present in the ophthalmology clinic waiting room verified by verbal identification and consent.

Pre and post-tutorial surveys were composed through Research Electronic Data Capture. No identifying information was collected. Demographic information of age and gender, baseline patient portal utilisation and knowledge, and barriers to usage were evaluated. Additionally, a 5-point Likert scale was used to question patients on portal feature comfort and knowledge both before and after the tutorial. The survey was developed by the research team to ascertain patients' level of agreement with comfort with various tasks. Differences in the before and after scores were used to determine change in knowledge. Patients were questioned regarding barriers to portal usage and could select from a list of various barriers. The presurvey, tutorial and postsurvey were administered sequentially using iPads. No incentives were given to participants. Analysis of effectiveness of this tutorial was performed through Microsoft Excel and χ^2 analysis.

RESULTS

During the recruitment period, 134 patients were approached to participate in this study, of which 70 patients agreed (52% acceptance rate). Of these 70 patients, 43% were male and 56% were female (one patient preferred not to answer this question). Four percent of patients were less than 35 years, 7% were 36–45 years, 17% were 46–55 years, 30% were 56–65

Table 1 Patient portal registration rates

Age	<35	36–45	46–55	56–65	66–75	76–85	>85
N	3	5	12	21	18	10	1
Registration rate (%)	33	80	58	48	39	60	0

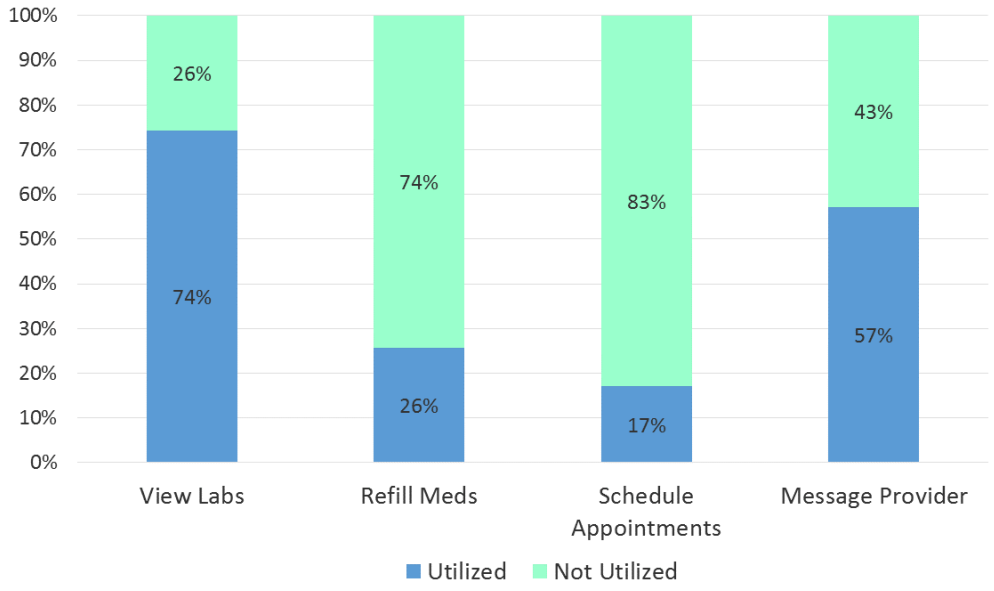

Figure 1 MyChart feature utilisation rates in registered users.

years, 26% were 66–75 years, 14% were 76–85 years, and 1% were 86 years and older. Of those who refused, 21 (33%) believed they were comfortable enough with the Epic MyChart features and that they would not benefit from viewing the tutorial. The remaining were uninterested in participating in a study, citing not wanting to be distracted while awaiting their name to be called, or being busy with work on their own portable electronic device. Of those who enrolled in the study, 50% had registered for our institution's patient portal while 30% were unaware of our institution's patient portal existence prior to this study. Registration rates based on age groups are shown in table 1. Registration rates were not found to vary between genders. Registered patients had viewed labs (74%) and messaged providers (57%) but rarely used other features such as scheduling appointments (17%) or requesting medication refills (26%) (figure 1).

Key barriers to patient portal usage were preference for telephone-based communication (26%) and knowledge of portal existence (21%). Among those who were registered for our institution's patient portal (n=35), the majority of patients had accessed the portal less than 1 month ago (74%), compared with 1–6 months ago (17%) and never (9%). Unregistered patients were significantly more likely to have at least one barrier to usage than registered patients (p=0.006). Barriers to portal use in this group of patients varied compared with barriers in those who had not yet registered (table 2). Unregistered patients were significantly more likely to note barriers related to discomfort with computer usage (p=0.02), lack of knowledge on how to use our patient portal (p=0.04) and lack of awareness of the existence of our patient portal (p<0.001).

The majority (86%) agreed that the tutorial would increase their complete utilisation of our institution's patient portal (figure 2). The knowledge and comfort level in using portal features increased greatly for messaging providers (64%), scheduling appointments (64%) and refilling medications (63%) but less so for highly used features such as viewing labs (49%) and logging in (49%). Changes in 5-point Likert scale comfort scores are illustrated in figure 3. Comparison of increases in feature comfort by at least one point on the Likert scale for those previously registered compared with those not yet registered is displayed in table 3. Unregistered participants had significantly

Table 2 Barriers to patient portal utilisation

Types of barriers	Registered (n=35)	Not registered (n=35)	p Value
I don't have a computer, email or internet access.	0%	6%	0.15
I feel uncomfortable using computers or the internet.	0%	14%	0.02
I feel unsure in how to use MyChart.	0%	11%	0.04
I would prefer to use a telephone to schedule appointments or contact my provider.	26%	26%	1.00
I was not aware of the existence of MyChart.	0%	43%	<0.001
I don't see the benefit in using MyChart.	0%	9%	0.08
I lost my login ID and/or password.	9%	9%	1.00
I don't have time to use MyChart.	3%	9%	0.30
I am not interested in managing my own healthcare.	0%	0%	1.00
Other, none of the above.	14%	3%	0.09
I do not have any barriers.	51%	20%	0.006

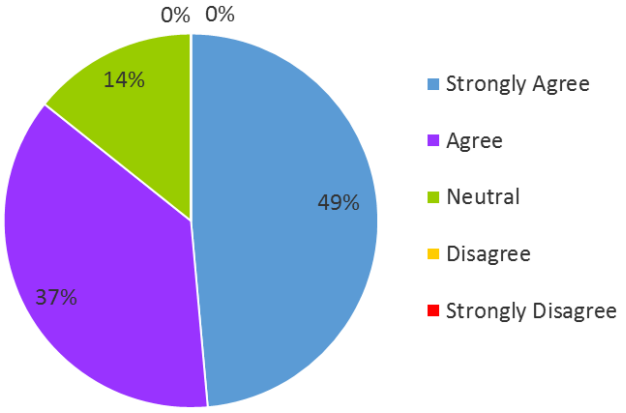

Figure 2 Patient responses to 'Tutorial Will Increase My Use of MyChart'.

Table 3 Tutorial effects of increased comfort for using patient portal features in registered and unregistered participants

Feature	Registered subjects with increased comfort rate (%, n=35)	Unregistered subjects with increased comfort rate (%, n=35)	p Value
Log in	20	77	<0.001
View labs	23	74	<0.001
Refill medications	46	80	0.003
Schedule appointments	54	74	0.08
Message provider	51	77	0.03

increased post-tutorial knowledge as compared with those who were registered for all features except in scheduling appointments for which both registered and unregistered groups saw substantial improvement in knowledge and comfort.

DISCUSSION

Our study indicates that a promotional iBooks-based tutorial could be an effective way to increase patient engagement with patient portals. The tutorial demonstrated some of the benefits of using the portal features, which Wald stated is required for successful promotion.[13] Additionally, given that it is publicly available at no cost through the iBooks store, the tutorial can be widely distributed—a limitation of other promotional videos and tutorials.[9]

Patient portal usability is a major barrier to patient sign-up and varies according to patient population and portal design. Identifying potential barriers and tailoring improvements may improve portal sign-up. A study that analysed ease of initial portal use in 23 patients from vulnerable populations found a need for 'tailored and accessible training and support to assist all vulnerable patients and/or caregivers with portal registration and use.'[14] Another study looked at usability of three currently available patient portals, finding that the majority of patients had difficulty performing tasks such as laboratory interpretation and medication management.[15] There is additional evidence that numeracy and internet experience have a significant impact on the success with which older adults used patient portals successfully.[16]

As seen in other studies,[17] the baseline registration rate for patient portals at our academic institution was high (50%). However, our study obtained more detailed data to determine which features of our portal are actually being used. Interestingly, registered users used administrative tasks such as scheduling appointments and requesting refills less often than viewing their labs. Education about these features increased patient's reported comfort and likelihood of carrying

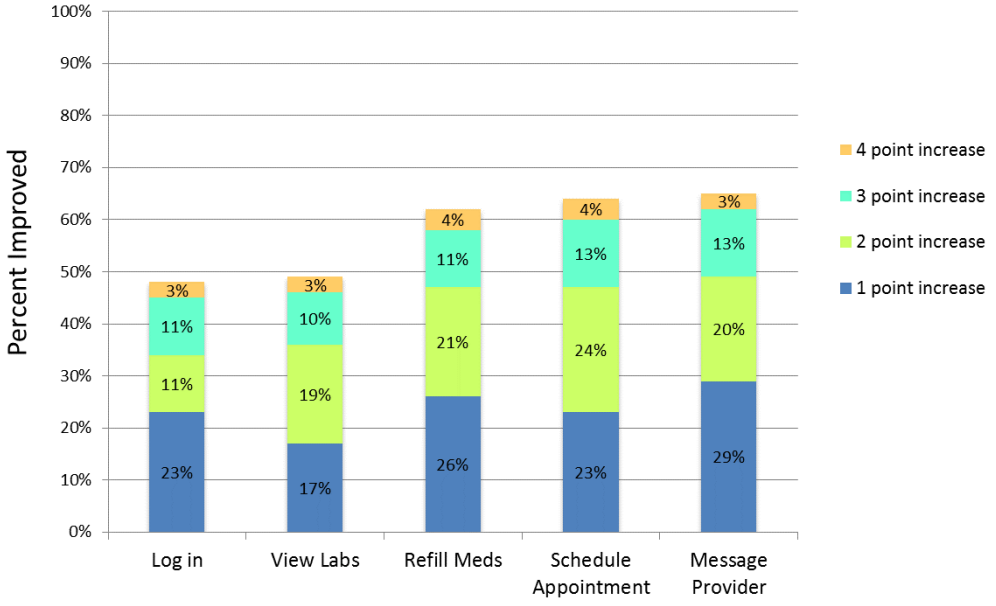

Figure 3 Changes in MyChart comfort level post-tutorial.

out these tasks themselves in the future, which could result in decreased administrative costs at clinics that adopt these video-based tutorials.

The largest reported benefits observed from this tutorial were in those patients who were not yet registered. Barriers such as lack of knowledge or comfort in using a computer-based portal were alleviated greatly by the tutorial as seen through the pre and postsurvey feature questions. Also, many unregistered users were unfamiliar with the existence of a patient portal and this tutorial served as an excellent method for introducing this available benefit in our healthcare system.

Our study had a number of limitations. One limitation was the demographic information obtained from our patient did not evaluate race, medical comorbidities, education or socioeconomic class which has been shown to influence patient portal registration rates.[17 18] Another limitation is that we were unable to measure changes in overall registration and portal utilisation after the tutorial's introduction.

Overall, our study demonstrated that perceptions of our institution's patient portal were greatly augmented through a video-based tutorial for both registered and unregistered patients. Tutorials providing instruction for various patient portal features may be easy and affordable methods to increase patient engagement in their healthcare. Future research is needed to show whether providing a link to this iBooks-based tutorial within the patient portal registration email or throughout more waiting rooms at our institution would be an effective and sustainable tool for patient portal adoption.

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Contributors HL planned the study. HL, MA and GG conducted the survey. HL, MA, GG and RTS contributed to the report. HL submitted the study.

Competing interests None declared.

Patient consent Detail has been removed from this case description/these case descriptions to ensure anonymity. The editors and reviewers have seen the detailed information available and are satisfied that the information backs up the case the authors are making.

Ethics approval IRB.

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