

Patient Portal Service: An Exploration of Patients' Experience and Perception

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Abstract— The New Zealand government is currently implementing electronic health records and encouraging general practices to enroll their patients into a patient portal service. Although literature shows the benefits of such a system for healthcare providers and patients, there is a lack of empirical research around patient's experiences and requirements. This study aims to bring to light these through a survey research of a major patient portal. The survey data reveals issues around lack of consultation around the design, inconsistency in service uptake and lack of training on the use of the service. Overall, it reveals that the current patient portal system is not designed to the patient's expectations.

Keywords – e-health, New Zealand, patient portals

I. INTRODUCTION

With technological advances, health care services worldwide are moving to deliver e-health services to patients in order to improve the quality of care, reduce operational costs and to manage the substantial amount of data generated. The benefit and value of a patient portal service for healthcare workers has been heavily investigated and studied in literature. A majority of these studies have investigated the use of electronic health records from the perspective of health care professionals due to the significant impact on their day-to-day activities. It is interesting to note that, in an industry where the quality of service is a need, few studies have been conducted to investigate the benefit, functional and non-functional needs of such a system from a patient's perspective. It has often been argued that the use of a patient-centred e-health service allows patients better insights and self-management of their health, including the ability to access their own medical records, immunisation history as well as perform tasks such as requesting repeat prescriptions, booking appointments, direct messaging to GPs or nurses.

This study aims to bring to light patients' perception and experiences with a major patient portal in New Zealand. Questions around perceived usefulness, accessibility, usability and reasons and intentions to continue or discontinue using the service are explored.

II. RELATED WORKS

Around the world, especially in the developed nations, e-health has been promoted to be the most promising tool to bring growth, cost savings and to improve the overall

quality, safety and efficiency of delivering health care to patients [1-3]. In a broader sense, the e-health concept has been promoted not only as a technological development, but also a state of mind - a way of thinking, a change in attitude and a commitment to improve healthcare by taking advantage of information and communication technology.

A. Patient Portals

There are many different definitions and terms for a 'patient portal'. Most of the existing literature uses the term 'personal health records' and 'patient portal' interchangeably. In the New Zealand (NZ) context, the term 'patient portal' is defined as a secure online site, provided by general practices (GPs), where patients can access, manage and share their health information and interact with their GP [4-5]

In the NZ context, most GPs utilise the PC-based practice management software called MedTech32. The Patient Portal is tethered to ManageMyHealth which is one of the most popular portal available that is developed by the same company (i.e. MedTech Global). While e-health sites generally provide 'read only' health information, a patient portal provides a secured platform where patients can log-in to view their own personal health information and communicate with their GPs via secure messaging, request repeat prescriptions and book appointments [6].

Patient Portals are expected to meet the 10 e's of e-health [7]: **Efficiency** – the portal decreases costs and enhances communication between providers and patients; **Enhancing quality of care** – allows healthcare workers to view up-to-date information to provide the best service; **Evidenced based** – allows patients to view detailed test results in order to make better decisions; **Empowerment** –empowers patients by providing knowledge and access to their own health records; **Encouragement** – a partnership is established between patient and provider where patients can contribute towards their own health; **Education** – patients can view their medical records and conduct their own investigation on diseases and issues; **Enabling** – exchanging and communication via secure messaging; **Extending** –enables patients to view their details such as immunisation history while abroad; **Ethics** – introduces a new form of healthcare interaction (where new challenges and threats could emerge); **Equity** – the portals will be equitable by allowing access to the same service for all classes of people.

B. Issues with e-health and Patient Portals Provision

An important prerequisite for the success of any online service is to ensure that the customers experience from the system and its interface satisfies both sensory and functional needs. The providers of patient portals and the government concerned must consider such portals an equal to other online services such as e-banking, online education and e-government services where the customer's needs requires a perspective on the design as well as having a deep understanding on the type of users likely to utilise the service [8].

Existing literature has focused on the potential benefits, utility and satisfaction patients can experience from using patient portals to access their health information, interact with their doctors and nurses, and to manage their own health. However, according to [3], patients are the missing piece of the introduction of e-health services and there is a lack of patient involvement in design and implementation of such services to identify what patients' actual needs and requirements are.

Prior research conducted has been primarily from experts' perspectives [9-10]. There have been very few studies conducted to understand how users perceive and utilise patient portals [11]. This demonstrates that there is still little known from the patient's perspective in regards to usability, perceived value and whether the patients have the intention to use/ continue using such portals.

C. Perceived Value, Usability and Use Intention

The importance of involving patients has been emphasized in the discussion [12] as it is the users who must incorporate patient portals into their lives. While there are few studies that have examined patient portals in regards to enrolment, utilisation, and factors that influence or affect the use among patient sub-groups, further research is crucial for understanding the experience and perceptions of patients. It is crucial that the service is usable and of value to patients, regardless of age, gender, ethnicity, education level, and IT competence

Usability assesses how easy the user interface is to use. If a website or system is difficult to use, lacks the necessary information, if people get lost, and/or if the information is hard to digest; people will not use/ discontinue use [13-14]. According to Gu *et al.* [15], poor literacy is a great concern for e-health services due to the technicality and sensitivity of medical information. As health literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand the basic health information and services needed to make appropriate health decisions" it is of paramount importance that health information on online services must be understandable and managed ethically to a wide range of patients, or the technology revolution will not reach its full potential and provide its benefits to all those using an e-health service.

Usability is defined by the following quality components:

- *Learnability* - How easy is it for users to accomplish basic tasks the first time they encounter the design?
- *Efficiency* - Once users have learned the design, how quickly can they perform tasks?

- *Memorability* - When users return to the design after a period of not using it, how easily can they re-establish proficiency?

- *Errors* (management)- How many errors can users make, how severe are these errors, and how easily can they recover from errors?

- *Satisfaction* - How pleasant is it to use the design?

A key and related component is *utility* which refers to the design's functionality: Does it do what users need? Together, usability and utility determines whether a website or system is useful. Nielsen [13] states that it matters very little if a system allows you to easily conduct a task that you don't want to do. A system can similarly fail if it can in hypothetical term do what you want but you are unable to, due to its poor interface.

For patients, the value of a patient portal may come from three general areas – reduction in medical costs, improvement in health care efficiency, and enhanced quality of care [16]. With health records, GP notes, lab results, immunisation history and medication list accessible online, it has become much easier for patients to have control and to monitor them [17] In addition, the ability to perform tasks and interact with the GP could lead to an enhanced relationship with the GP. It has been proposed that patient portal services sparks a new age of collaboration between patients and doctors where patients can become more involved and engaged, thus becoming a partner or co-creator of their own health [18].

Perceived usefulness and satisfaction are the two predictors of acceptance and use continuance intention [19]. Patients may have pre-acceptance attitude based on cognitive beliefs which stem from advice from their doctor that the patient portal is useful and valuable. The main focus for patient portals is to encourage new users to enroll and utilise the service as well as retaining the current users. This is important for the success of the initiative and the future of the delivery of health care. The government and providers must ensure that they do not ignore a user's post-acceptance use satisfaction. Feedback and suggestions from patients themselves must be seriously considered as their actual experience and the issues they encounter in use may become a reason that they stop using and prevent others from adopting the service, if not addressed.

III. RESEARCH DESIGN

An online survey questionnaire was created in Qualtrics. There were two levels of recruitment of participants. The first step was to recruit General Practices (GPs) around New Zealand who have a large number of patients enrolled into a patient portal service. The second step involved securing the assistance of the GPs to distribute the online survey to all of their patients, including those who are not enrolled into the patient portal with the aim of getting insights into why certain patients have opted not to enroll for the service.

The first step was contacting the fifteen Primary Health Organisations (PHOs) from across different regions of New Zealand and communicated to them the research brief and invitation to assist in the research. Two PHOs replied with a

Research Application to be completed due to a high demand of research requests. Both PHOs opted to not take the research proposal further due to other commitments at the time of the research. One PHO responded with interest in the research and agreed to distribute the necessary documents to the GPs in their region. Due to unknown reasons, the correspondence with the contact ceased and no patients from the region ended up participating in the survey.

Due to the time constraints, a contingency recruitment was required. Local GPs in Wellington were contacted directly. This reduced the scope of the research significantly from across New Zealand to a single city. One GP agreed to distribute the necessary documents to only the patients enrolled in the patient portal through its secure messaging service. This reduced the research scope further. Hence, these should be noted as limitations of this research and the survey findings need to be read in this context.

A selection of key findings is presented next.

IV. FINDINGS

The participating GP had 1,900 patients enrolled into the patient portal. A total of 218 patients responded to the survey. Out of these, 195 were completed responses. 64% were females and 36% were males. The key demographics of the participants are older patients (i.e. mean age group of 45-54 years old), where the majority were at least high school graduates with a self-estimated IT competence of moderate to extremely competent.

All respondents were utilising the ManageMyHealth portal service. 70% of the respondents have been enrolled into the service for more than 12 months or more, and close to 50% were accessing the service once every 3 months which coincides with the standard period of 3 months for prescription medication before repeats can be requested or visits to the GP for a check-up.

To understand patients' perception of the service it is important to see if the respondents are still using traditional methods to interact with their doctors. 82% reported that their preference was using phone, 62% said they preferred talking to doctors in person compared to 37% who used the portal secure messaging function. This shows that the patient portal would not necessarily replace traditional methods. Instead it supplements the existing communication channels. Most of the respondents stated that it is much easier to call their GP compared to turning on a machine and logging in to the portal to make an appointment. Some respondents also stated that they prefer the human interaction and getting immediate feedback.

The features most often used according to the respondents are: view lab results (92%), view GP notes (71%), view reports of medical conditions (65%), request repeat prescriptions (61%), booking appointments (52%), and to view immunisation history (49%).

The mean value of each of the four survey items measuring the "Intention to continue using" ranged between 1.33 and 1.41 – i.e. participants "Strongly Agreed" that they have the intention to continue using the patient portal.

Nearly all respondents (98%) reported that they did not receive any training prior to using the service. Only 2%

reported receiving written or verbal instructions from their GP. This suggested that training offer was not proactive and nearly all respondents resorted to exploring the system themselves and there was a possibility that they were not using the system as effectively as possible.

When asked if the portal is easy-to-use and reliable, the results were 88% and 89% respectively agreeing and 92% of the respondents agreed that the portal was intuitive enough for them to learn how to use it quickly. The majority of the patients found that the service is using understandable terms that were used consistently throughout the portal.

The feature respondents found the most valuable is 'Requesting repeat prescriptions'. Patient portals should enable patients to conduct tasks in a more convenient manner and thus save them time. 61% of respondents strongly agreed that the service saved them time. 25% somewhat agreed.

Patient portal services allow patients to be more aware of their health and have more control. By allowing patients to keep a diary that doctors can view as well as providing a direct line of communication to the GP and their doctors, existing literature explains that patients can develop better relationships with their GP as a result.

In the survey findings, 23% of the respondents strongly agreed that they have developed a better relationship with their GP. 29% somewhat agreed, whereas 38% neither agreed nor disagreed. 6% somewhat disagreed, and 5% strongly disagreed. It was possible that patients with chronic conditions who required frequent monitoring may find that the service allows for a better relationship compared to patients who do not require or visit their GP very often.

If doctors utilise the service properly, the portal provides an alternative channel through which they can communicate better with their patients which could lead to enhanced relationship over time. However, this might not be the case if the patients still prefer to visit their doctors in person as indicated in the responses to a previous question. This might be the case for older patients who relatively lack confidence in using ICT.

One of the objectives of the patient portal service is to empower the patient. Among the survey respondents, 35% strongly agreed, 35% somewhat agreed, 21% neither agreed nor disagreed, 5% somewhat disagreed, and 4% strongly disagreed. Looking at the type of respondents, especially the frequency of access, it appeared that "casual" users of the service did not perceive any "control" over their health care compared with a patient who used the service on a more regular basis.

In terms of satisfaction with the portal, 87% agreed that ManageMyHealth was easy to use. 56% of the respondents reported to be extremely satisfied with the ManageMyHealth Patient Portal service. 28% were somewhat satisfied, 11% were neutral, 3% were somewhat dissatisfied and only 1% were extremely dissatisfied.

When asked if the patient portal can be improved, about a quarter of the respondents provided suggestions. The suggestions were largely related to user interface issues:

- Use more layman terms rather than medical terminology/ jargons
- Provide links to external Web resources to find out more about medications and medical terms
- Clearer indication of “new” alerts
- Ability to personalise appearance e.g. colour, theme
- Simplified interface – reduce number of levels and modules to access information
- Needs to be made more usable using mobile devices
- Display statistical information using visual presentations
- Displaying information/results in plain English as opposed to tabulated results

A number of respondents commented that the service was not as intuitive as it could be. The other comments that are worth noting and worthy of further investigation are:

- The patient portal is a useful tool to view certain information but did not have a great impact on their lives in regards to their health
- The portal should allow for shared access to accounts e.g. between spouses
- Should be integrated with other health care systems provided by e.g. hospitals (including A&E) and specialists/ consultants
- Features do not appear to be utilised well enough by the GP e.g. no response in emails, GP notes are lacking
 - The service does not explicitly advise what services are available/ unavailable.

V. DISCUSSION AND CONCLUSION

The respondents of this research had a high level of education and self-rated moderate to high IT competence where nearly all had experience in utilising other online services such as online banking, e-government services and using social media applications. It is not surprising that the majority felt they were able to learn how to use the patient portal quickly without any training or guidance.

The general census was that they found the service intuitive to use, the service was easy for the respondents to become skillful, and found it generally easy to get the service to do what they wanted it to do even though there are areas that could do with improvement such as the need for a more user-friendly, mobile-friendly and intuitive user interface as well as use of layman terms and links to complimentary resources.

There were no obvious differences in responses between the respondents who had a lower level of education and rated themselves with lower IT competence. They also generally reported being able to learn to use the service quickly and perform tasks without training or support.

An issue arose from the findings relates to both functional and aesthetic aspects. The respondents noticed that when they received a notification for something “new” to check such as test results or updates to read, the patient portal did not highlight the “new” updates well enough for the users to find once they logged into the service.

The findings in this research positively reflect the convenience that the service provides which has been reported in the literature. Many respondents believe that the

portal has saved them time by allowing them to book appointments online, getting notifications and viewing lab results. Some respondents contradicted this however when asked why they did not use a particular feature, specifically booking appointments. The respondents stated that it is much easier to call their GP and they prefer human interaction.

Other issues include the difficulty to book appointments because there were no confirmation messages that appointment requests are put through, appointments made were at times not received by the GP and the inability to view what appointment is available.

In comparison, viewing lab results is the most popular feature used by the respondents. Respondents liked that they could get notification of a lab result through the system instead of getting them through the post. Respondents felt that this feature saved them time and anxiety.

Even though there has been some discussion in the literature about use of patient portals enhancing patient-doctor/ GL relationships, the survey findings did not support this. It is worth noting however that in the literature, keeping journal diaries tend to be utilised by patients with chronic diseases that require daily updates that their doctors can view online, thus allowing both parties to be kept up-to-date. Because this study did not specifically study or identify such patients that required a closer relationship with their doctor, a conclusion cannot be drawn with regard to this.

Perceived usefulness and satisfaction are the two predictors of acceptance and use continuance intention (Bhattacharjee, 2001). The results from the survey items on value and satisfaction were overall positive, reflecting respondents’ intention to continuing using the patient portal service they are currently utilising. Nevertheless, a number of issues were highlighted.

Respondents believed that the service lacked clear help and guidance, specifically instructions on how to use features and explanations of medical terms. Addressing these could increase the usability and user-friendliness of the service.

Respondents also comment that the government and providers must ensure that the doctors are actively participating in the portal service by providing meaningful notes on test results that is clear, understandable and concise. For example, a simple “no further action required” comment is valuable to patients who are looking at test results that they are unable to decipher. Respondents recognise that doctors may also need to be trained on the use of the portal to make good use of the tool to interact with patients and to maximise the benefits of the portal service.

Despite the identified issues, overall, the respondents from this research are satisfied with the patient portal they use and intend to continue using the service. However, in order to retain its current users and to encourage new users to utilise the service, the issues identified must be addressed by involving patients in its future developments.

A number of areas for future research on patient portals are identified. The integration of patient portals and other e-health systems should be looked into.

The patient portals are currently only available for those who are 18-years and older. The government and the health sector should look into having children into the system with

their own records, perhaps under their parents' account. This will allow a parent to access, view and conduct the same administrative tasks for their children's medication and viewing test results. Several respondents also expressed a need to have a shared access to their spouse/ partner's account. There are obviously ethical issues that would need to be understood and ironed out with regard to these suggestions.

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