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Identifying Barriers that Affect Patients Access to their Patient Portals and MHealth Applications

Rameria L. Stewart
University of Tennessee Health Science Center

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Identifying Barriers that Affect Patients Access to their Patient Portals and MHealth Applications

Rameria Stewart, BHA/HIS, LPN

Department of Health Professionals

University of Tennessee Health Science Center

Towards Requirements for a Masters in Health Informatics and Information Management

Advisors: Dr. Rebecca Reynolds and Dr. Sajeesh Kumar

IDENTIFYING BARRIERS THAT AFFECT PATIENTS ACCESS TO THEIR PATIENT
PORTALS AND MHEALTH APPLICATIONS

Abstract

Technological advances have generated new resources that allow patients to be more involved in their healthcare. As different innovations find their way into the informatics sector of healthcare, patients experience some challenges as they try to adopt these innovations. One particular innovation in healthcare has been the use of patient portals to promote patient engagement, which will encourage patients to take on a more active role in their healthcare. This study focused in exploring the barriers in the access of MyChart portal at Baptist Memorial Care Corporation and, to some extent, how to handle this problem. An online survey questionnaire was sent to 22 randomly selected support agents and face-to-face interviews were scheduled with 5 of these participants. Data obtained from the 19 respondents who responded to the questions and the five interviewees revealed that the major barrier to patient portal access is the lack of computer or phone skills. At the same time, proxy access problems were identified as another challenge.

IDENTIFYING BARRIERS THAT AFFECT PATIENTS ACCESS TO THEIR PATIENT PORTALS AND MHEALTH APPLICATIONS

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Definition of Terms

Health Literacy is defined as the capacity of individuals to obtain process and comprehend simple health services and information, which are necessary when making health decisions.

Information and communication technology (ICT) is another/extensional term for information technology which stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.

MHealth (mobile health) is a general term for the use of mobile phones and other wireless technology in medical care. The most common application of mHealth is the use of mobile phones and communication devices to educate consumers about preventive health care services.

Password is used to describe a word or a set of characters utilized in user authentication or prove identity of a certain user.

Patient Portal is a term used to describe a secure online website developed to provide patients with convenient access to personal health information at any time of the day or night and from anywhere provided they have an Internet connection. Patients are required to use a specific username and password to view health information, such as recent doctor visits, discharge summaries, and medications.

Personal Health Records (PHR) is an application utilized by patients in the maintenance and management of their health information in such a way that the information remains secure, private, and confidential. .

Proxy access is when patients can give permission to another adult to access their medical information via their patient portal allowing the designated representative to help manage the patient's healthcare. This differs from Power of Attorney. Proxy access is granted to parents of children up to the age of 13, after the age of 14 is reached the parent must have consent from the child to access their health records.

Meaningful use is the use of certified EHR technology in the improvement of efficiency, safety and quality. Other aspects of meaningful use include patient and family engagement, improvement and coordination of care, and maintenance of security and privacy of patients' health information.

MyChart Username is an identification used by a patient/user to access their MyChart.

Support Specialists (also known as helpdesk agents) provide service or product information, solutions and relevant details to customers.

1   Chapter 1: Introduction

1.1   Statement of the problem

Over the years, there has been a rapid increase in the utilization of electronic health

records (EHRs) which are known to provide a number of opportunities in the enhancement of

communications between patients and service providers. One of the important elements of the

use of these records has been the use of patient portals that act as electronic points through which

users can access EHRs. These portals are also referred to us tethered personal health records and

have a great potential to enhance communication in a clinical setting.

Among many benefits, these portals have been found to allow patients to take part in

disease management programs, schedule appointments, refill medications, access test results and

securely exchange messages with providers. Consequently, the portals have the potential to

improve patient engagement as well as improve timeliness, quality, and satisfaction in healthcare

delivery. As such, there is no doubt that, with the available federal subsidies, patient portals will

continue to play an important role in the delivery of healthcare and help providers to achieve

meaningful use of electronic records. Researchers have studied the use of different aspects of

electronic health (eHealth) in the management of diseases. Particularly, much study has been

done on the use of eHealth in the management of diabetes mellitus and other diseases. The

increase in the use of EHRs has partially been facilitated by development of the Health

Information Technology for Economic and Clinical Health (HITECH) Act, which advocates for

the achievement of meaningful use through well-developed incentive programs. Despite these

facilitating factors, the implementation and adoption of patient portals and other aspects of EHRs

is compromised by a myriad of factors or barriers.

The thought or the assumption that patient portals and other aspects of mHealth have the

potential to transform healthcare systems across the world in a number of ways has facilitated

much research. Studies into the positive transformations facilitated by these portals have

indicated that they have the potential to enable healthcare systems to effectively play their role of

providing high quality services and addressing health needs of the members of the public. For

example, states across the United States can use patient portals to cut the cost involved in the

provision of healthcare. Additionally, the portals have the potential to allow states to maintain

and improve the quality of their healthcare. More importantly, healthcare systems using patient

portals as a point of contact can easily reach patients in remote areas.

1.2   Background of the problem

Just like other developed nations, the United States faces a high prevalence of chronic

diseases and lifestyle diseases as the major health problem. What is more, the prevalence of these

disease conditions has been on the rise and the government authorities are forced to come up

with appropriate ways through which the conditions can be managed. In an effort to achieve a

significant level of disease management, the government has experienced the challenge of a poor

provider-to-patients ratio here in the United States. The current stats show that the current ratio

stands at about 300 physicians per 100,000 people. For this reason, the remedy has been to

formulate solutions that can reduce visits of patients to health centers or reduce the need for

patients to physically contact the few physicians. The implementation of patient portals and

mHealth applications have been identified by healthcare organizations and the government as

viable solutions.

Patient portals are developed in such a way that patients can communicate with health

service providers and access their health information through online websites. On the other hand,

mHealth applications are used to promote public and medical health practices by taking

advantage of mobile devices. The mobile devices in common use in the support of mHealth

applications include patient monitoring devices, personal digital assistants (PDAs), and mobile

phones. Among these mobile devices, mobile phones are the most important since they allow the

users to take advantage of devices' core features which include short messaging and voice.

Since their invention, mobile applications and patient portals have been applied to

transform provision of healthcare at the individual, community and regional levels. The use of

mobile application is known to have created avenues for application of patient portals and vice

versa. For example, at the regional level, social networking models have been used in the past to

electronically link many people through the use of tools such as mobile text messaging.

Although the initial application of social networking models was in disaster mitigation, their uses

have found applications in health promotion. For instance, specific messages can be carefully

crafted and disseminated to the members of the public through text messaging to encourage them

to adopt healthy behaviors. Patient portals and mobile applications have allowed health systems

to move away from traditional health-oriented campaigns that relied on the use of radio,

televisions, and billboards can be expanded to accommodate cellular networks.

Although a number of previous studies have explored different aspects of patient portals

and mHealth in general, deficiencies in the research base on this topic can be identified. Previous

studies on this area have over-concentrated on aspects of patient portals in the developing

countries mainly because these countries are faced by a special category of health challenges

such as communicable diseases. This means that only a limited number of studies have focused

on the developed world. Furthermore, the few studies that focused on patient portals in the

developed world have barely studied the barriers of the use of these portals and what can be done

to achieve improved adoption and use. Previous studies on this area of study have concentrated

on the potential of patient portals.

Many studies have recognized that the major obstacle in the use of patient portals in

different regions of the world is the lack of an enabling environment in the form of economic

power to subsidize the price of mobile tools. Despite the fact that most countries have a good

base of companies offering mobile technology services, the accessibility of mobile tools that can

support the use of patient portals is still limited to a few citizens. Therefore, studies on such

limitations are needed to strengthen the research base on the successful implementation of

patient portals to achieve specific objectives in the United States. It is important to appreciate

that researchers have made an effort to understand the challenges experienced in the use patient

portals. However, little is known about the privacy and security challenge of using patient

portals. Most patient portal potential users in rural regions have a poor education background and

must be made to understand how secure their information will be if they embrace the use of these

portals. From these arguments, it is clear that the implementation and use of patient portals

happen amid an array of barriers which are yet to be understood clearly and in a deeper manner.

Being a support specialist that assist patients with accessing their patient portal has given

myself and my co-workers insight into the anxiety and frustration that they feel while attempting

to utilize their patient portals. Many of the users are over the age of 65 and are lacking basic

computer skills. Potential barriers such as time, access to the internet, knowledge of proxy

access, device use and the password reset process will be evaluated and reviewed to help identify

and reduce barriers that are affecting patients logging into the portal. Out of the 15,248 MyChart

calls that the BMHCC helpdesk has received for 2017 year, 11,638 were requesting password

resets or difficulty navigating to the site or application and 1,065 requesting activation codes. It

is important to note that these calls were received although a method to reset the password is

available for patients via the website without having to call the helpdesk. This has prompted

questions to arise in regards to barriers that can be affecting patient's attempt to access their

patient portal. Data collected from the Baptist One Care MyChart Dashboard shows that 200,791

Baptist One Care MyChart users have logged into the MyChart portal as of December 31, 2017

while only 24,549 MyChart users logged into the portal via the applications. Lack of knowledge

of the existence of an application could be a factor in this. This could potentially be a barrier as

well. The MHealth application version of the Baptist One Care Portal is easier to view and

navigate as it was designed for smartphones and tablet users. This study will help identify

barriers that might be interfering with patients being able to access the MyChart patient portal

with ease.

1.3   Purpose of the study

From the above discussion, it is apparent that the use of patient portals does not happen

without some challenges of barriers. This explains why the purpose of carrying out this study

was to explore the importance of patient portals and identify the barriers that affect the use of

these portals by patients. An additional aspect of this study was to determine what can be done to

make it easier for patients to access their portals without worrying about the security of their

health information.

1.4   Significance of the study

The results and discussions provided in this study are expected to have a major

implication in healthcare, especially the use of technology in this field. An understanding of the

potential benefits of patient portals, such as cost-reduction and quality improvement will guide

health providers in the design of better portals. The challenges experienced by adopters of patient

portals have been identified. With this understanding, strategies or measures can be developed to overcome the identified challenges. Particulars of the challenges, whether client-based or developer-based, have also been identified. This is an indication that the developed strategies or measures can be targeted to the right area.

In the course of the study, gaps in the field were identified, with limited research on barriers to the use of patient portals being the major gap. Therefore, the current research can direct future research on this topic on such areas, thereby creating a rich body of knowledge. Many researchers and individuals in the general population are aware that the use of patient portals is hampered by several challenges. However, only a small proportion of these people understand the specific barriers to the use of these portals. Therefore, this study is of great importance to the field of study as it outlines examples of specific barriers.

The government is also expected to benefit from this study by identifying areas where improvement will be beneficial in the adoption and use of patient portals that have been developed by its health systems. Furthermore, government authorities can use this study as a source of areas it needs to channel its interventions in an effort to improve the use of patient portals. It is worth to note that actual users of the patient portals stand a chance to benefit from this study in that they will get insights on how to improve the security of their health information.

1.5   Theoretical framework

How and why people adopt or embrace innovations has facilitated much research over the years. As research on these two aspects gained momentum, scholars developed different theories to describe factors surrounding adoption of innovations, including the barriers to

adoption of different forms of technologies. Despite the existence of many theories and models

such as concerns-based adoption model and technology acceptance model, this research was

based on diffusion of innovations theory as the most appropriate theory. The suitability of this

theory in the study in question is based on the fact that the theory recognizes that the adoption of

an innovation such as the use of patient portals can be influenced by different factors. The theory

identifies the four classifications of these factors in the form of the social system, innovation's

attributes, communication channels, and the adopter's characteristics. For the purpose of this

study, the most significant factors fall in the adopters' characteristics, such as health literacy,

computer skills, and level of training.

1.6   Research Questions

The primary research question in the study was: what barriers are affecting patient's

ability to log into their Baptist One Care MyChart portal after their accounts have been setup by

their provider's office for use? The second question in this study was: What can support staff do

to better assist patients with accessing their MyChart portals? This was answered after the

analysis of the findings.

1.7   Limitations

This study was conducted by support specialists employed with BMHCC Information

Systems department. Surveys and interviews were conducted on support specialist in this

department. The data collected is a reflection of what they have experienced and knowledge that

they have obtained from the training received while employed with BMHCC and from

interactions with Baptist One Care MyChart portal users in regards to portal access. No feedback

is being obtained directly from the actual MyChart portal users. This sample size for this study

was impaired by unforeseen absence of support specialists and the hire of new specialists.

Additionally, the study was based on responses provided by just 19 helpdesks agents at a single

health corporation. For this reason, it may be difficult to get the real barriers experienced by all

the support agents.

2   Chapter 2: Literature Review

2.1   Introduction

This chapter was developed with an aim of presenting the arguments made by different

authors on diverse aspects of the topic in question. The first section is on the patient portal

definition and background, which discusses the history of the patient portals in the United States.

The next section is on the benefits of patient portals that cover the reasons why health institutions

and authorities should be motivated to implement this innovation. This chapter also discusses the

factors that facilitate the adoption and the use of patient portals here in the United States. What

follows is a discussion on what should be done to achieve success in the use of patient portals.

Additionally, the chapter has recognized the features to consider in the development of effective

patient portals. Different barriers to adoption and use of patient portals have been presented and

what can be done to overcome some of these barriers.

Articles included in this section were retrieved through a search conducted on PubMed

and Web Junction, which are online health related repositories/libraries. Specifically, the terms

'history of the patient portals', 'utilization of patient portals', 'adoption of patient portals',

'development of patient portals', and 'patient portals barriers' were used to identify relevant

materials to support this review. The search resulted with a total of one thousand two hundred

and forty nine articles, which were narrowed down to two hundred and fifty using an inclusion

criteria that focused on peer reviewed materials published not more than five years ago, with full

text available and using qualitative or quantitative methods of research. Furthermore, an

exclusion criteria that targeted articles without a comprehensive focus on patient portals in the

United States was utilized to reduce the materials to eighteen. Additional materials utilized in

this section were identified on Google scholar using the term 'patient portals'. In this regard, a

total of five articles providing an abstract definition of concepts related to patient portals were

considered.

Literature review flow chart.

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┌─────────────────────────────────────────────────────────────────┐
│   Located Records by conducting searches on PubMed and Web        │
│   Junction websites                                               │
└─────────────────────────────────────────────────────────────────┘
                               │
                               ▼
                ┌──────────────────────────────┐
                │   Searched Terms:            │
                │   "History of patient portals"│
                │   "Utilization of patient portals"│
                │   "Adoption of patient portals"│
                │   "Development of patient portals"│
                │   "Patient portal barriers"  │
                │   Yield:  1,249 articles      │
                └──────────────────────────────┘
                               │
                               ▼
                ┌──────────────────────────────┐
                │   Inclusion Criteria:        │
                │   Full Text Available         │
                │   Peer Reviewed               │
                │   Published from 2012-2017    │
                │   Qualitative/Quantitative    │
                │   Yield: 250 articles         │
                └──────────────────────────────┘
```

Exclusion Criteria: articles lacking comprehensive focus on patient portals in the US

Total Excluded= 232

Exclusions

Inclusions

Final Eligibility:
18 Articles from this search were used along with 5 articles from a Google scholar search using the term, 'patient portal.'

2.2   Patient portals' definition and background

To come up with a patient portal, an electronic personal health record (ePHR) is tethered

or directly linked to an EHR. With such a linkage, it is possible for the health service providers

to populate the patient portal with relevant information such as the lab test results, allergies, and

the problem list. At the same time, patients can act as the source of the data that populate the

EHR. On the other hand, if the ePHR is untethered, it entirely controlled by the patient. In such

cases, it is the responsibility of an individual patient to enter all his/her data or authorizes another

person to transfer the information to the ePHR from a particular source such as pharmacy or a

laboratory (Tieu et al., 2015). Again, the individual has the mandate to determine parties who

can access this information. The popularity of the untethered ePHR remains low since its value is

based on the willingness of the patient to maintain and manage his/her information. Healthcare

organizations have little influence on the patient engagement when untethered ePHRs are used.

For this reason the use of patient portals directly linked to an EHR has gained popularity in an

effort to increase patient engagement in health decisions.

The introduction of patient portals happened in the late 1990s through a handful of

healthcare organizations. Examples include Indivo introduced by Boston Children's Hospital and

MyChart introduced by the Palo Alto Medical Foundation (Halamka, Mandl & Tang 2008;

Mandl et al., 2007). Nevertheless, widespread use of patient portals did not happen until 2006, a

year in which a number of initiatives coincided to facilitate the adoption of these portals. To

begin with, this is the year that Microsoft and Google launched ePHRs. Secondly, it is during

this year that private firms were awarded Centers for Medicare and Medicaid Services (CMS)

contracts, which allowed them to use claims data provided by Medicare programs to carry out

feasibility studies for the evaluation of ePHRs. Lastly, the rapid adoption of patient portals in

2006 was facilitated by the fact that data sharing programs was developed by different associations that facilitated the rapid development of ePHR (Weitzman, Kaci & Mandl, 2009). In addition to the three initiatives, the same period experienced a major shift in the social setting in which there was an increase in the regular use of tools important in information and communication sharing. Good examples of these tools include social networking cites and smartphones. This shift was a clear indication that the general population was ready to embrace technology in different aspects of the society.

Currently, the most important factor facilitating the development of patient portals is the meaningful use criteria developed under the CMS EHR program. The meaningful use is associated with features with a direct effect on the functionality of patient portals. To begin with, meaningful use criteria require that a patient should receive a clinical summary of his/health information after every visit. Secondary, there should be secure exchange of messages between a patient and the service provider. Thirdly, the portal should give the patients an opportunity view, download, and transmit their health data. Fourthly, the criteria require that the patient be provided with customized education. Fifthly, patients must receive preventative service reminders. Lastly, the innovation must give room for reconciliation of medication (Ahern et al., 2011).

2.3   Benefits of patient portals

As doctors, patients, and administrators utilize patient portals, a number of benefits of these portals to both patients and physicians have been realized. The most noted of these benefits is the ability of patient portals to support preventive care. When physicians apply patient portals correctly, they are to make sure that their patients achieve a fuller and a better understanding of health. Research studies have come up with findings that prove that the use of patient portals as

an interface of communication between patients and doctors has been a source of many

improvements. The use of patient portals does not only improve self-management of active

treatments, but also improves adherence to medication. What is more, patients using the portals

show increased propensity and appreciation for preventive care. According to Tieu et al. (2015),

patients who use well-developed portals exhibit a higher level of knowledge of their treatment as

well as an improved rate of preventive care. More importantly, the number of visits the doctor

visits the patient is expected to make is reduced significantly. Therefore, it is clear that patient

portals are important tools in the reduction of patient cares since the travel expenses are reduced

or eliminated altogether. On the side of the physicians, patient portals get more time to handle

other issues in preventive care.

Health service providers have used patient portals to increase revenue and to create new

business opportunities. It is known that adoption of patient portals can increase patient payments

by 4% to 8%. This is valuable since physicians find it difficult and expensive to track down

clients for unsettled bills. Patients using online portals pay their bills easily and quickly. Most

patients in previous studies argued that they find patient portals attractive, a factor that helps

physicians to retain patients by reducing turnover. Therefore, this can be used as a way to

improve or retain revenue. Patients who have already embraced the use of portals are 13% more

likely to stick to one provide despite the fact that we are living in an era of increased choice

(Goldzweig et al., 2015). This is of great benefit since it has been shown that a returning patient

allows physicians to avoid administrative costs and increases value by about 15% in comparison

to a new patient. This can translate to savings amounting to thousands of dollars from every

patient in a single year.

Cost saving through the use of patient portals is achieved by healthcare organizations as the executives and administrators get an opportunity to make their daily operations more efficient and sleeker. As a communication tool, patient portals increase the efficiency and the speed at which scheduling and communication with the patient is done. These portals have been used to automate several processes and eliminate the need for staff to spend time on them. Patients can refill a prescription, make an appointment, have clarifying questions or pay a bill. This creates a room for physicians to achieve more accurate orders and schedules thereby eliminating various errors such as missed appointments (Goldzweig et al., 2015). Generally, patient portals are implemented to create a standard for more coordinated and better communication between patients and care providers. In addition to logistical and administrative gains achieved through the practice management tools, there is a great possibility that improved health outcomes will be achieved. This benefit is especially enjoyed by patients with ongoing treatments or needs. Patient portals have made it easier to monitor chronic care since the portals give the patients the freedom to work with a doctor remotely and create a schedule that best meets their needs.

Goldzweig et al. (2015) identified additional benefits of using patient portals as a tool of communication between patients and doctors. The portals have been preferred by many as they enable individuals to securely send and receive messages. This way, the need for long phone calls has been eliminated and patients can ask diverse questions between appointments. Patient portals have also been used to meet some requirements in the Meaningful Use criteria. For example, the education materials provided are patient-specific. Addition components of meaningful use which can be achieved through patient portals include ability to access personal health information and clinical summaries. It is important to stress that patient portals allow

patients and physicians to enjoy access at any time of the day or night, allowing them to check or

respond to posted messages at any time. Regardless of the office hours, patients can easily reach

the physicians.

2.4   Factors favoring adoption of patient portals in USA

Although the use of patient portals is hampered by a number of factors, research has shown

that there are various factors that favor the adoption of these portals in the United States and other

nations of the world. In the United States, there is an almost universal penetration of smartphones.

This has provided the country a strong foundation for the implementation of patient portals because

a majority of citizens are conversant with the use of these devices other than for the purpose of

receiving and making calls. In fact, the percentage of smartphone owners in the United States rose

from 35% to 77% between 2011 and 2017 (Sarkar et al., 2017). Another encouraging thing is that,

in addition to being smartphone owners, majority of Americans are owners of different types of

other information devices. About 80% of Americans are currently owners of a laptop or desktop

computer while nearly 50% are tablet computer owners. What is more, about 20% own an e-reader

device. Researchers have attributed the great growth in the use of smartphones to the drop in the

price of the gadgets. More so, the United States leads many nations in internet penetration as the

IT sector in the country has greatly grown to record an almost 80 percent internet penetration

(Sarkar et al., 2017).

2.5   Success factors

When exploring the topic of patient portals, researchers have discussed what various

players in the healthcare sector need to do to make a patient portal successful. In the healthcare

sector here in the United States, authorities are always looking for that unique component that

will encourage patients to use the portals for the first time and come back to the portal again.

Unfortunately, it is clear that finding this special component is not that simple. However, some

healthcare systems find it easier to achieve patient engagement than others. Since there is no

single strategy to encourage patients to sign-up for the portals, researchers recommend the use of

a multifaceted approach (Sarkar et al., 2016).

A major factor in the success of patient portals is how the portal is marketed or its

marketing strategies. Individuals and organizations involved in promoting the use of patient

portals vow that the best way to market a patient portal is to take advantage of different

promotion methods at diverse touch points. Just as every individual prefers a different learning

method, there exists no one-size-fits all strategy in the marketing of a portal to different people.

Therefore, the secret remains the integration of the promotion message into every avenue such as

articles and newsletters.

According to Lober et al. (2016), another success factor in the use of patient portals is

based on the level of patient engagement. It is recognized that most organizations or portal

developers may be able to encourage patients to sign up for their portals in the initial stages but

find it difficult to make these patients use the portals continuously. It is in this light that

Zickmund et al, (2015) avowed that there is a need for portal developers to offer the

characteristics that the patients that are respondent to in the most favorable manner, such as

secure messaging and online payment of bills. Again, health systems may also improve their

patient engagement by providing the patients with an opportunity to enjoy online access of the

test results on a frequently as possible. Although some tests cannot be released through online

platforms, most of them can and should be. Still on the issue of patient engagement, making it

possible for patients to share digital images can be a great portal feature. Although some

physicians may fear that the feature may be used inappropriately by a section of the patients, previous evaluations have provided positive results.

According to Kruse et al. (2015), although medical groups are always making efforts to achieve meaningful use through the use of patient portals, it is a challenge to make the patients sign up for the portal and continue using the portal. However, the good news is that portal developers with specific strategies in mind can find it easier to overcome these hurdles and achieve meaningful use. First of all, the individual or organization developing the portal needs to have a clear understanding of what is to be accomplished through the use of the portal. In this regard, the party involved must specify whether the goal is simply achieving the meaningful use requirements or there are wider goals to be achieved, which may include improving patient engagement or reducing costs. If there are several goals to be achieved, it is advisable to think about their rank since trade-offs are inevitable in such cases.

There is a significance level of evidence that organizations or authorities who select portal leaders known to prioritize patient needs are very successful. Rather than having a committee, it is advisable to have a single person to be in charge of the entire portal strategy as it makes timely completion of various tasks a reality. This person must have a clear understanding of what the patients want from the technology. Although IT leaders may be of great value, they may over-concentrate on technical challenges. On the other hand, physicians selected as leaders may undervalue the need for patient convenience. This explains why Kruse et al. (2015) recommended the use of leaders who are used to dealing with patients as their customers, with a Chief Marketing Officer as a good example.

Another secret in successful use of patient portals is making physicians advocates of the

portal. Although these professionals may not be the best agents in the portal oversight role, they

can be of great importance when it comes to the portal use. The attitude of the patients toward

the patient portal is a major determinant of how the patients are likely to adopt the technology.

With this in mind, authorities can print out notepads where physicians can leave a "prescription"

note for enrollment into the portal. Goel et al. (2017) idea that medical groups can promote the

portal through opportunities outside the examination room. The principle is to think creatively,

such as playing a message that encourages patients to take advantage of online portals instead of

playing on-hold music. Similarly, laboratory results, bills and other paper mailings can be used

inform patients that online portals are more convenient and quicker. In other words, it is

important to take advantage of every contact with the patient in promoting the use of the portal.

Research has indicated that success in the use of patient portals is likely to be achieved if

the portal is developed in such a way that it contains features that patients care about most as this

attracts them. For example, proxy access of caregivers of older individuals or minor patients has

been proven to be one of the most powerful features. Other high ranking features include bill

payment, educational material for patients, and online prescription refill requests. Surprisingly,

portals that focus on convenience before privacy are the most successful. Nevertheless, privacy

remains to be an important consideration in the development of a patient portal. To many

patients, a privacy breach only becomes a reality when it happens. Patients are more concerned

about their convenience than their privacy. For this reason, some companies fail due to security

breaches but recover because they have a high convenience factor (Goel et al., 2011).

2.6 Features to consider in patient portal development

Even before a patient portal is made available for use by the target audience, the

development of the portal has to incorporate specific features if success is to be achieved at the

utilization level. Previous successes and failures have made researchers formulate conclusions on

the most important features to be made part of a patient portal. To begin with, a good patient

portal must have a top-notch interface, which means that it should have an interface that makes

an easy-to-use platform. The portal should make it easy for patients to request or cancel

appointments, make payments, access patient forms, and manage their health records. Secondly,

Irizarry et al. (2015) affirmed that well developed patient portals must contain the recall

notification feature. This features allows for patient reminders to be achieved through push

notifications, text messages, or automated emails. If this factor is considered and implemented,

the physicians can increase their work efficiency without necessarily having to involve the staff

(Krist et al., 2014).

Simple functionality has been reported as an important feature of a good patient portal.

Senior citizens and those with chronic conditions will only use online portals if the use of such

portals makes their work easier than having to visit a doctor. A portal with a carefully designed

functionality can give an organization an advantage over another portal developer if it is

designed in such a way that it can serve the right purpose. On the minimum, patients should be

able to use the portal to upload or download medical information, update their medical history,

and book quick appointments (Greysen et al., 2015).

In addition to providing basic information, well developed patient portals should provide

additional information. This means that the portal should provide the patients with the flexibility

of gaining access to as much information as possible in addition to getting appropriate insights

on their reports. Whether it is information about immunization, medical diagnoses, or medical procedures, it is vital to develop a portal in such a way that it can offer such options. Apart from a well-built patient portal, there is a need to make sure that the portal can increase quality by encouraging the patient (Turvey et al., 2017). To achieve this, a personalized message from the physician can be incorporated into the portal in such a way that patients are informed about the best ways to improve their health and wellness and the associated benefits. Therefore, a proactive outreach from the physician can be of great help.

Patient portal developers, physicians, and patients have previously highly ranked portals with an excellent database record. In this regard, a patient portal should be able to reflect history on the doctors who have previously treated a particular patient. At the same time, the portal should reflect illness history, diagnosis history, and medication history. In addition to saving time, physicians find it easy to understand the root cause of the illness. One of the important features of a well-developed patient portal has got do with its availability. Since emergencies can occur anytime of the day or night, the patient portal should contain a doctor-on-call feature. Through this feature, patients should be able to get instant help from a physician.

2.7   Barriers to adoption of patient portals

The rate at which patient portals are being used in the United States is a clear indication that they are going to be very important in the future of healthcare systems as these systems continue to rely on EHRs and other important digital constructs. However, the adoption and use of patient portals is not as simple as many may think. Rather, the adoption and use of these digital tools happens amid a collection of challenges or pitfalls. As a matter of fact, many researchers have explained that this innovation is yet to prove its worth (Osborn et al., 2016; Tang & Lansky, 2015).

Experts have noted that the challenges of patient portals have little to do with the

provider market, which remains hesitant. The argument is that much of the pitfalls have to do

with patients, who happen to be the targeted subjects. When portals are developed to target the

young users, their adoption and use is not as challenging as in cases where the older patients are

targeted. Patients above the age of 65 have usability and security issues that hamper the use of

portals, requiring help from doctors or family members. The challenge is complicated by the fact

that the patient population is characterized by older patients. What is more, this is not expected to

change any time soon. For example, the United States has 42.5 million older patients, a figure

that is expected to increase to be as high as 98 million by 2060. Despite the fact that the main

reason why patient portals are developed is to help in the management of the chronic issues and

complex health needs associated with older patients, these patients find it difficult to use the

portals. This is attributed to the low level of digital literacy among this section of the population.

Health policies, ICT policies and related regulations may not be in a position to support the

successful adoption and use of patient portals as currently constituted. Most states lack ICT policy

integration in matters relating to health and e-Health. The healthcare field is a sensitive area and

the lives of people are always at risk. There is also the lack of synchronism among the American

ICT policies and e-Health. The U.S. Department of Health and Human Services has not set up

proper guidelines that govern individuals' information in regard to e-Health services, placing the

electronic health information of patients at risk. Therefore, this may lead to an adoption barrier of

patient portals as most people may fear for the safety and privacy of the sensitive data they provide.

Legislation and standards on eHealth are crucial in all countries for successful patient portal

adoption (Wade-Vuturo et al., 2016). Regrettably, satisfactory standards for software transmission,

architecture, infrastructure, medical informatics, medical imaging, interoperability and

bioinformatics are yet to be well developed in most states. There is inadequate electronic

legislation in United States, which negatively impacts on aspects of eHealth. This creates a gap in

the legal framework on matters of data protection and privacy.

Patient portal adoption is also hampered by the challenge of resistance to change. The

resistance may come from both the healthcare providers and the patients targeted by the

implementation. The healthcare providers may be resistant to shift to patient portals because of the

fear that their jobs will be at stake. They may also be resistant to any form of change that disrupts

the way they have always done things in their working environment. On the other hand, the

residents of rural areas may be reluctant to shift to the new innovation because they may want to

cling to the old manual system of seeking healthcare services. The targeted recipients of the

innovation are also not fully conversant with the internet use despite the high internet penetration

here in the United States. This will be a challenge to the adoption of patient portals in the future

because the recipients may show some form of resistance to change.

The challenge brought about by poor ICT infrastructure in some regions or states should

not be ignored when implementing patient portals. In rural parts of this country there are minimal

infrastructure in place. What is more, ICT staff in healthcare sector lacks the necessary skills in

health informatics. Though there is a high internet penetration in United States, the bandwidth is a

major challenge in some regions, thereby limiting the adoption of mHealth applications such as

patient portals (Wade-Vuturo et al., 2016).

Financial constraints may also affect the adoption of patient portals in different regions.

The healthcare sector is not funded to the levels that it should be for effective adoption of such

innovations, especially for the health systems based in the rural areas. The development of eHealth

infrastructure may be costly and demands for additional funding in the healthcare sector. A study by the world Health Organization (WHO) indicated that inadequate funding is a major challenge to adoption of mHealth services in a number of countries (WHO 2013).

Security and privacy issues remain major challenges in the use of patient portals. This is based on the fact that it is a challenge to authenticate users. In other words, it is not always easy to tell whether the patient is who he/she is claiming to be. Additionally, the patient portal website has to be hosted on the Internet, thereby exposing it to different vulnerabilities and threats. There is a need to make sure the highly sensitive information is protected from hacking activities of people with ill motives. In terms of privacy, parents to minors have may be in a dilemma when it comes to the information they should have access to without a signed authorization from the minor.

Another challenge in the adoption and use of patient portals is the low levels of health literacy among Americans. Health literacy should be understood as the ease with which an individual can obtain, understand, and process fundamental health services and information needed when making health decisions. Public health systems and healthcare institutions have a critical role to play in health literacy since their actions can make it difficult or easier for individuals to find and use health services and information. The problem becomes more serious due to the fact that poor health literacy is difficult to identify. As a matter of fact, individuals with a high level of health literacy may face challenges. This happens if one is not very familiar with how his/her body works or with medical terms or even when one finds it difficult to interpret numbers. In the United States, the proportion of adults with proficient health literacy is as low as 12%. This is an indication that over a third of the adult population in the United States has challenges when it comes to execution of basic health tasks such as adhering to medications. What is more, the issue of poor health literacy affects adults in all ethnic and racial groups.

However, some disparities in specific statistics do occur. For example, Hispanic adults are more hit by this problem than white adults with 65% and 28% individuals with literacy levels below the basic level respectively.

2.8 Remedies

Although the adoption of patient portals is faced by the aforementioned challenges, it is encouraging to note that most of these challenges can be overcome through specific strategies. Firstly, as the government needs to come up with stringent measures that will ensure the security and integrity of patient data is maintained. This recommendation is based on the fact that different regions experiences data security and privacy concerns. The strict measures should include a number of legislations as well as how to implement the developed legislations. Privacy and security concerns are major issues in all eHealth services and therefore the need of having specific privacy policies and regulations in place to guarantee the patients of the safety of the information they provide.

Secondly, there is need to train the healthcare providers and patients on the use and benefits of patient portals. This will address the issue of resistance from both sides. The patients should be trained on proper use of these portals applications to make it easier for them to familiarize with these applications and break their fears. The training should address all the concerns from both parties.

Information and communication technology (ICT) infrastructure is a very vital element in the effective implementation of eHealth innovations. Therefore, the relevant Department should improve the ICT infrastructure all over the country, including the rural areas, if the implementation of patient portals is to be successful. The ICT sector should also address the challenge of internet

connectivity, especially in rural areas. There is also a need for them to partner with NGOs and private companies to improve ICT infrastructure for eHealth applications. The mobile service providers should also implore 4G network coverage in all areas. The healthcare sector funding impacts the adoption of eHealth. The government should channel more funds to the healthcare sector to improve it to a level deemed appropriate to accommodate changes brought about by the patient portal implementation. Addressing corruption in the various governmental sectors will help curb the embezzlement of public funds. The funds can be in turn directed to the healthcare sector. Strict measures should be taken on those involved in corruption (Kruse et al., 2015).

It is very clear that the major challenge in the adoption and use of patient portals is the security and privacy aspects. For this reason, researchers have argued that the use of patient portals can be improved by tackling this problem. To begin with, there is a need to ensure that the development of the patient portals meet the security and privacy requirements provided by the state in its regulations of the exchange of information between care receivers and care providers. Providers of patient portal platforms must utilize Certified Electronic Health Record Technology (CEHRT). Another way to improve the security and privacy of patient portals is to make sure that the patient data is encrypted.

This move is a good way to ensure that the data is protected when it is in transit or stored in some locations. Even when intercepted or stolen, encrypted data is meaningless to the unauthorized user. The data makes sense to the authorized recipients after they use a decryption code to convert the coded data to plain text (Kruse et al., 2015). The use of 256-bit encryption is preferred as the most effective form of encryption. Even in cases where an organization deems encryption as unnecessary, it is important to document the reasons for this decision.

Previous studies have also recommended the use of role-based access control in handling

the security and privacy issues experienced in the use of patient portals. This means that a

regulation is put in place to grant information access to specific employees or users based on

their role in the organization. For instance, the data revealed to nursing staff may not be the same

as the data revealed to the administrative staff. The best idea is to consider the information

needed by a certain employee and grant access to just what is needed by such an employee.

Just like in other portals and applications with the user login aspect, the use of extensive

password protection is necessary when dealing with the security issue in the application of the

patient portal innovation. A well-developed patient portal must require the patients to use a

password whenever the need to access the portal as well as when there is a long period of

inactivity. To increase the security of a portal, a user account should be locked if a password is

entered incorrectly for several times. Another strategy is to ensure that all user accounts have

strong or complex passwords, which can be achieved through the use of special, numeric, and

alpha characters in the same password. Security experts argue that requiring users to change their

passwords after every 60 days can decrease the probability of being hacked. Further validation of

users can be done through additional security questions, such as the favorite city. Two-factor

authentication should also be used by integrating the EHR and the patient portals in such a way

that the patient receives a message into his or her mobile phone containing a security code to use

when gaining access to the portal (Furukawa et al., 2015).

Audit trails can also be used to improve the security of patient portals as they allow the

providers to record major activities. If period reviews are conducted, it becomes easy to reduce

the risk of inappropriate access and developed a culture of accountability and responsibility.

Every employee with access to patient portals must be made part of a robust training that entails

specific security agreements and policies. In addition to audit trials, it is necessary to make sure

that the patient portals can display patient consent forms in a printable fashion. Of all the types of

consent forms, the most important is the opt-in agreement where patients have a clear

understanding of the particulars of the portals and agree to take the involved risk. It is also

important to encourage providers to have a custom privacy policy as well as terms of conditions

of access. These should outline how the health organization deals with the privacy of the

sensitive information collected about the patients (Irizarry et al., 2015).

2.9   Summary

The literature review has revealed that the use of patient portals began back in the 1990s

but only gained popularity in 2006 due to some specific reasons. Since their introduction, patient

portals have allowed doctors, patients, and administrators to enjoy a number of benefits. Patients

have used these portals to improve self-management of active treatments and adherence to

medication. In addition to being used a tool to reduce the number of visits to the doctor, patient

portals have been used by administrators to reduce the cost of care. The almost universal

penetration of smartphones in the United States and improved ownership of other information

devices have been the major factors facilitating the adoption and use of patient portals. To

achieve success in the use of patient portals, proper selection of portal leaders, patient

engagement, and marketing must be done. In terms of the appropriate features, the portal should

have a top-notch interface, simple functionality, additional information, and an excellent

database record. The adoption and use of patient portals happens amid a collection of challenges

or pitfalls. Older patients find it difficult to use these portals due to digital literacy issues and

security-based features. ICT policies in the utilization of eHealth in United States are yet to be

developed to the required level. Again, resistance to change by both the patients and healthcare

providers has been a barrier as well as financial constraints and fears based on security and

privacy of the sensitive data. However, it is made clear that these challenges can be overcome

through specific strategies. Although the research on this area is extensive is extensive, it

remains somewhat inconclusive. Therefore, there is a need to explore more on the phenomenon

of barriers to the use of patient portals in the United States.

3   Chapter 3: Methodology

3.1   Introduction

This chapter was developed to present the methods preferred in the course of the study as well as justifications for the methodological choices made. The study setting section specifically describes where the study was based. The next section outlines the research design on which the study was based. There is also a discussion on the data sources for the study together with recognition of the advantages of the preferred source. In another section, it was important to describe the study population, particulars of the sampling technique, and the sample size. The two data collection instruments are discussed in this chapter together with their strengths. The other aspects of the chapter are the ethical considerations and methodological limitations.

3.2   Study setting

The study was carried out at Baptist Memorial Healthcare Corporation (BMHCC), which is located in Memphis, Tennessee. The medical facility has grown to a significant level since it began operating in 1912 and is now in a position to meet the needs of the communities it serves. Its selection as the setting for this study was partially based on the fact that it is one of the largest healthcare organizations in the mid-southern region of the United States and is involved in use of innovative technology for excellence in patient care, Baptist One Care MyChart patient portal being one of these innovations.

3.3   Research design

The research design selected in a particular study depends largely on the focus of the study. This study focused on identification of potential barriers that affect patients' ability to access patient portals. According to Creswell & Clark (2007), research design is a term used to

refer to the general strategy utilized by researchers when integrating different components of a study into a logical and coherent way. The research problem is explored effectively if the most appropriate study design is selected at the initial stages of the study. Based on this, Neuman. (2013) affirmed that a research design should be understood as a blueprint used by researchers in the process of data collection and analysis. Quantitative and qualitative designs are the major research designs used in data collection and analysis. However, the two designs are used together in the same study creating what is called a mixed methods research design. To successfully achieve the aim of the study, it was necessary to use a mixed methods design to make it possible to collect both qualitative and quantitative data. The qualitative aspect of the study involved collection of primary data from helpdesk agents who work at BMHCC. On the other hand, the quantitative aspect of the study was based on data collection from these sample population using an online questionnaire.

3.4   Data sources

There are two types of data sources in research in the form of primary and secondary sources. Data is said to have been sourced from primary sources if it is collected from actual subjects or participants in real time (Creswell & Clark, 2007). On the contrary, secondary sources are made up of already documented information. The data collected in this study was obtained from primary sources since actual participants were involved. The use of primary data in this study was an advantage as it allowed the researcher to collect up-to-date information from the helpdesk agents. At the same time, the primary sources were used to avoid the risk of invalid data associated with some secondary sources, and indication that primary data is more trustworthy than secondary data.

3.5   Population and sample design

A research population is defined as a collection of people or subjects characterized by similar features or traits (Neuman, 2013). However, the person conducting the study should always select a set of subjects to base the study on, which is often referred to as the sample. This is recommended because the financial and time constraints may not allow one to study the entire target population. For this study, the study population was made up of all the help desk agents working for BMHCC. However, only 24 agents were included in the sample using a set of specific criteria. The inclusion criteria required the agents to have been trained on the MyChart administration feature, have been employed for more than 30 days, and have received calls in regards to MyChart access. Simple random sampling method was used to select the 22 employees from the help desk agents. Here, after an ethical approval from the BMHCC, the names of all the help desk agents put in a box after which 22 names were drawn from the box independently and made part of the sample population. The most significant advantage of this sampling method is its ease of use. For example, there was no need to divide the target population into sub-populations unlike in stratified sampling. Moreover, the simple random sampling method allowed the researcher to obtain an unbiased representation of the study population (Neuman, 2013). This was possible because every agent has an equal chance of being made part of the sample.

3.6   Data collection instruments

Since the study utilized a mixed methods research design, there was a need to use interviews and questionnaires as the data collection instruments. The survey questionnaires were made up of open-ended questions to make it easier to analyze the collected quantitative data. This questionnaire was created on esurveycreater.com and a link to the survey was distributed

via e-mail by the Director of Customer Support at BMHCC. The many advantages associated

with online questionnaires encouraged their use in this study. To begin with, the researcher was

aware that the help desk agents are great internet consumers and have the basic skills needed by

an individual to fill an online questionnaire. Unlike in traditional methods of data collection, the

online questionnaire greatly reduced the time required in the collection of data (Creswell &

Clark, 2007). For this reason, the time needed to complete the project was reduced, which

allowed the researcher to save the cost involved.

More cost saving was made possible by the fact that the cost of posting the questionnaires

to the participants through the post office was eliminated as well as the cost of recording data

into the database. It should be appreciated that responses provided through theses questionnaires

were recorded into the database automatically and authorized people could access the data at any

time. An additional reason why questionnaires were preferred is that they can be used to collect

large amounts of data from many individuals within a short period of time (Creswell & Clark,

2007). The tool was ideal for data collection as it made it possible to reach the participants

regardless of their geographical location. Once they received a link of the survey questionnaire,

the participants would react to the questions at any time within the data collection period of two

weeks. This made the tool more convenient than tools that require the participants to a specific

section of their day to respond to the questions. More importantly, questionnaires are generally

more confidential in nature than most methods of data collection. This increased the response

rate as the participants felt safe to share even sensitive information.

The survey questionnaire was pretested using 3 individuals selected from the sample to

make sure that they met the inclusion criteria. These participants were required to fill the online

questionnaires as they would during the actual study. They shared their thoughts about different

aspects of the questionnaire and the questions. Using the insights provided by the three

participants, the researcher made necessary improvements before the actual study. For example,

irrelevant and ambiguous questions were eliminated. Again, the length of some questions were

reduced to make sure that they were short and direct as possible.

Collection of qualitative data from the five support agents selected from the 22

participants was done using face-to-face interviews. The interview process was as illustrated in

figure 1 below.

stage 1	• Planning
stage 2	• Identification of questions
stage 3	• Identification of participants
stage 4	• Interview sessions
stage 5	• Transcription and translation of data
stage 6	• Data analysis

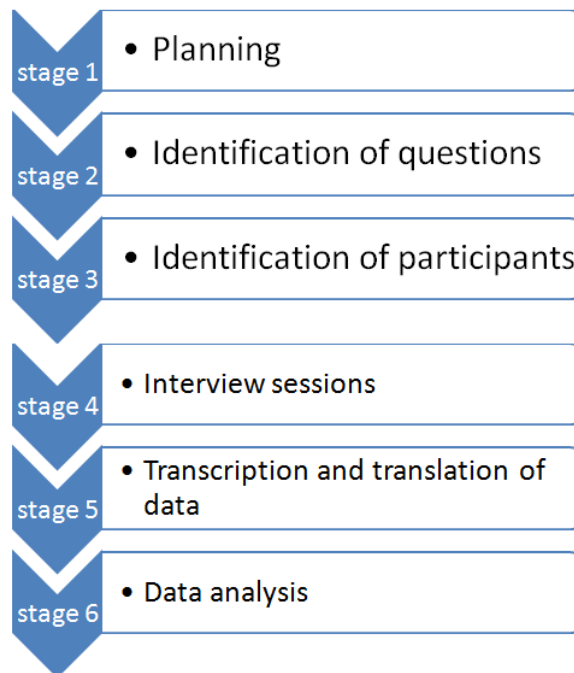Figure 1: Interview process

The use of face-to-face interviews as another instrument in the process of data collection

was preferred since such interviews have several advantages which can be used to overcome

some limitations associated with questionnaires. Therefore, the data collection instrument

increased the reliability of the study. One of the major advantages of face-to-face interviews is

that they give the researcher a room to capture both verbal and non-verbal cues such facial

expressions and body language (Taylor, Bogdan & DeVault, 2015). This advantage allowed the

data collector in this study to obtain more insights on the questions being asked. Also, it was

possible for the data collector to identify when the interviewees were uncomfortable with the

questions. Unlike when questionnaires are used, interviews allowed the interviewer to remain in

control of the entire interview process in addition to keeping the interviews focused to

completion. In other words, the interviewees were not subjected to distractions such as social

sharing, web surfing, video streaming, and answering emails. At the same time, accurate

screening of the participants was possible and more accurate data was obtained than when

questionnaires are used. This is because the physical presence of the interviewer in the process of

data collection may have discouraged the respondents from providing false information.

3.7   Data analysis

Since both qualitative and quantitative data were collected in this study, there was need

to use qualitative and quantitative data analysis methods respectively. Analysis of quantitative

data collected through the use of survey questionnaires was done using the inferential statistics

aspects of Statistical Package for Social Sciences (SPSS) version 23.0. This package was

important in determining statistical measures of the sample such as the mean, standard deviation,

median, mode, variance, skewness, range, minimum, maximum, Kurtosis, and sum. For each

research question, the researcher was interested in measuring the frequencies, percentages, and

cumulative percentages. On the other hand, the analysis of qualitative data collected using face-

to-face interviews was done through content analysis. Here, the specific aspects of the responses

provided by the interviews were analyzed, with similar responses being grouped together to

come up with reliable inferences.

In terms of the response rate, out of the 22 individuals made part of the sample, only 19 filled the questionnaires. However, all the five participants requested to become part of the interviews agreed to provide the sought data. The reliability of the data collection instrument was determined by using the student's *t*-test to measure standard errors, such as the standard error of skewness, standard error of mean, and standard error of Kurtosis at $p<0.001$ level of significance. In the analysis of data generated from the interviews, the researcher used codes starting with PPP to stand for Patient Portal Project. In addition, a unique number was assigned to each participant to come up with PPP1, PPP2, PPP3, PPP4, and PPP5 as the codes for the five interviews.

3.8   Ethical considerations

Just like in any other study, there was a need to adhere to all relevant ethical principles in the process of carrying out this study. To begin with, ethical approval and permission was obtained from relevant authorities and institutions. For example, permission to use MyChart (Baptist's Patient Portal) access data from MyChart Dashboard was requested from the Director-Medical Information Systems at BMHCC. Also, approval to circulate the survey to helpdesk agents was sought from the Director of Customer Support. Finally, approval from Baptist Memorial Health Care Corporation IRB was obtained. As another ethical requirement, the researcher made sure that all the sampled support specialist and agents were taken through the specifics of the research such as the focus, procedure or any risks following participation before they were asked to provide the required data. It was expressed to the participants that participation in this study was not required and that completion of the survey and/or interview was strictly voluntary. According to the notification at the beginning of the survey and interview, the participants were free to withdraw from the study at any time between enrollment and final stages of data collection.

The researcher was aware that confidentiality is an important aspect of a study. The need

to achieve confidentiality in the study compelled the researcher to ensure that personal

information provided by the agents was not made available to any individual who was not a party

to the study. The use of interviews and survey questionnaires did not subject the participants to

any physical, psychological, or emotional risk. The participants were specifically informed that

their data was to be used for the study purpose only. A higher level of confidentiality was

achieved by way of ensuring that only codes were used to identify the respondents rather than

using names of the participants.

3.9   Methodological limitations

Despite the fact that online questionnaires were a source of a number of benefits, the

instrument created notable limitations. The absence of the researcher when the participants were

answering the questions may have encouraged some dishonesty. This can be circumvented in

future by way of assuring the participants that a high level of privacy and confidentiality will be

maintained. At the same time, some respondents may have interpreted the questions differently

from others since there was no person to clarify the questions whenever a need arose as it is the

case in interviews. Therefore, some of the answers provided by the help desk agents may have

been subjective. To avoid such cases in future or to avoid skewed responses, it is important to

use simple and easy-to-understand questions. The simple random sampling method used in the

study may have created some limitations. For example, the method may have forced the

researcher to over-select one gender thereby reducing the reliability of the data. Face-to-face

interviews were also a source of some limitations for the study. Face-to-face interviews are

expensive to schedule and conduct, a factor than increased the overall cost of the study.

Additionally, the physical presence of the data collection in the interview sessions may have

discouraged some interviews to provide sensitive information.

3.10 Summary

The chapter has specified that the study was carried out at BMHCC located in Memphis,

Tennessee. Based on the nature of this study, a mixed methods research design was preferred in

the collection and analysis of data. This involved collection of up-to-date information from

randomly selected support agents at BMHCC. A survey questionnaire and face-to-face

interviews were the data collection instruments, targeting 22 and 5 participants respectively. An

online questionnaire was used and its distribution to the participants was done via email. The

study was made as ethical as possible by making sure that a consent form was provided,

confidentiality and privacy was maintained, and enrolment was on voluntary basis. Data analysis

was done using both quantitative and qualitative methods. Online questionnaires may have given

the respondents some room to provide false information while interviews are expensive to

schedule and conduct.

4   Chapter 4: Results

4.1   Introduction

This chapter was developed to present the resulted from the data collection process.

Different parameters of the sample are presented as well as results on each of the research

question. The results generated through the use close-ended survey questionnaires are presented

as statistical tables and graphs. On the other hand, results generated in the collection of data

using face-to-face interviews are presented by way of quoting unique assertions made by the

interviewees.

4.2   Survey results

4.2.1   Sample measures and response rate

Table 1 is a description of the results of the different parameters of the sample, such as

the mean, standard deviation, median, mode, variance, skewness, range, minimum, maximum,

Kurtosis, and sum.

Table 1: Sample profile

		Participant #	1. How long have you been assisting patients/callers with accessing their Baptist MyChart?	2. When taking a MyChart call, the most requested assistance is?	3. From your experience, which devices are being used by the callers/patients when calling into have their password reset?	4. When a patient/caller calls back after having their password reset, which of the following do you see the most?	Attempting to log into the wrong website	Attempting to log in via the MyChart App	Requesting help with navigating inside of MyChart	5. I find that most of my MyChart callers/patients are:	6. What is the average age of your MyChart callers/patients?	7. From my observation while assisting patients/callers with accessing their MyChart account, I have noted (rate each option) : *	That they are comfortable with using the MyChart portal	That they feel uncertain about using the MyChart portal	That they feel pressured to use the MyChart portal	8. In your experience, which of the following would you say is a major issue that is a barriers hindering patients accessing there MyChart	9. In your opinion, are callers reluctant to give you the required identifying information that is required to access their MyChart account?	10. In your experience, what is most likely to happen when a caller is requesting access (login information) to another users MyChart account and proxy access is questioned by you to the caller, Does the caller	11. When checking for proxy access in a patient's/caller's MyChart what are you looking for?	12. Proxy access is a feature of MyChart that can be setup by:	13. From your experience, Do you think that the request for access (password reset) to MyChart via email that was implemented this year is:
N	Valid	19	19	19	19	0	19	19	19	19	19	0	19	19	19	19	19	19	19	19	19
	Missing	3	3	3	3	22	3	3	3	3	3	22	3	3	3	3	3	3	3	3	3
Mean		39393088.79	2.00	2.00	2.26		1.95	1.47	2.53	1.58	2.58		2.16	1.42	1.58	1.05	1.68	3.21	1.16	2.47	2.42
Std. Error of Mean		1958762.984	.286	.000	.104		.162	.140	.177	.192	.139		.191	.159	.176	.053	.110	.196	.086	.193	.176
Median		41344575.00	1.00	2.00	2.00		2.00	1.00	3.00	1.00	3.00		2.00	1.00	1.00	1.00	2.00	3.00	1.00	3.00	3.00
Mode		4135937a	1	2	2		2	1	3	1	3		3	1	1	1	2	3a	1	3	3
Std. Deviation		8538049.903	1.247	.000	.452		.705	.612	.772	.838	.607		.834	.692	.769	.229	.478	.855	.375	.841	.769
Variance		72898296141120.050	1.556	.000	.205		.497	.374	.596	.702	.368		.696	.480	.591	.053	.228	.731	.140	.708	.591
Skewness		-4.359	.576	.524	1.170		.074	.924	-1.310	.990	-1.168		-.322	1.436	.937	4.359	-.862	-1.042	2.041	-1.160	-.937
Std. Error of Skewness		.524	.524	.524	.524		.524	.524	.524	.524	.524		.524	.524	.524	.524	.524	.524	.524	.524	.524
Kurtosis		18.999	-1.521		-.718		-.766	.038	.171	-.775	.582		-1.488	.912	-.542	19.000	-1.419	.972	2.410	-.479	-.542
Std. Error of Kurtosis		1.014	1.014	1.014	1.014		1.014	1.014	1.014	1.014	1.014		1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014
Range		37407465	3	0	1		2	2	2	2	2		2	2	2	1	1	3	1	2	2
Minimum		4135937	1	2	2		1	1	1	1	1		1	1	1	1	1	1	1	1	1
Maximum		41543402	4	2	3		3	3	3	3	3		3	3	3	2	2	4	2	3	3
Sum		748468687	38	38	43		37	28	48	30	49		41	27	30	20	32	61	22	47	46

4.2.2 Response rate

Table 2 clearly indicates that the response rate in this study was 86.4%. Indicating that 19

out of the 22 participants enrolled into the study.

Table 2: Response rate

Participant #

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4135937	1	4.5	5.3	5.3
	41318658	1	4.5	5.3	10.5
	41318679	1	4.5	5.3	15.8
	41318979	1	4.5	5.3	21.1
	41323813	1	4.5	5.3	26.3
	41326388	1	4.5	5.3	31.6
	41327464	1	4.5	5.3	36.8
	41337069	1	4.5	5.3	42.1
	41342096	1	4.5	5.3	47.4
	41344575	1	4.5	5.3	52.6
	41344891	1	4.5	5.3	57.9
	41346223	1	4.5	5.3	63.2
	41347359	1	4.5	5.3	68.4
	41347606	1	4.5	5.3	73.7
	41352324	1	4.5	5.3	78.9
	41353054	1	4.5	5.3	84.2
	41361170	1	4.5	5.3	89.5
	41379000	1	4.5	5.3	94.7
	41543402	1	4.5	5.3	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

4.2.3 Research questions' results

Table 3 shows responses of the participants concerning the number of years they have

assisted patients at Baptist to access MyChart portal.

Table 3: Participants' experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 years	11	50.0	57.9	57.9
	3-4 years	5	22.7	26.3	84.2
	4 or more years	3	13.6	15.8	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

As seen above, 57.9% of the participants had assisted patients to access MyChart portal

for 1-2 years. 26.3% of the participants had assisted the patients for 3-4 years while 15.8% of the

participants had been assisting the patients for more than four years. This information is

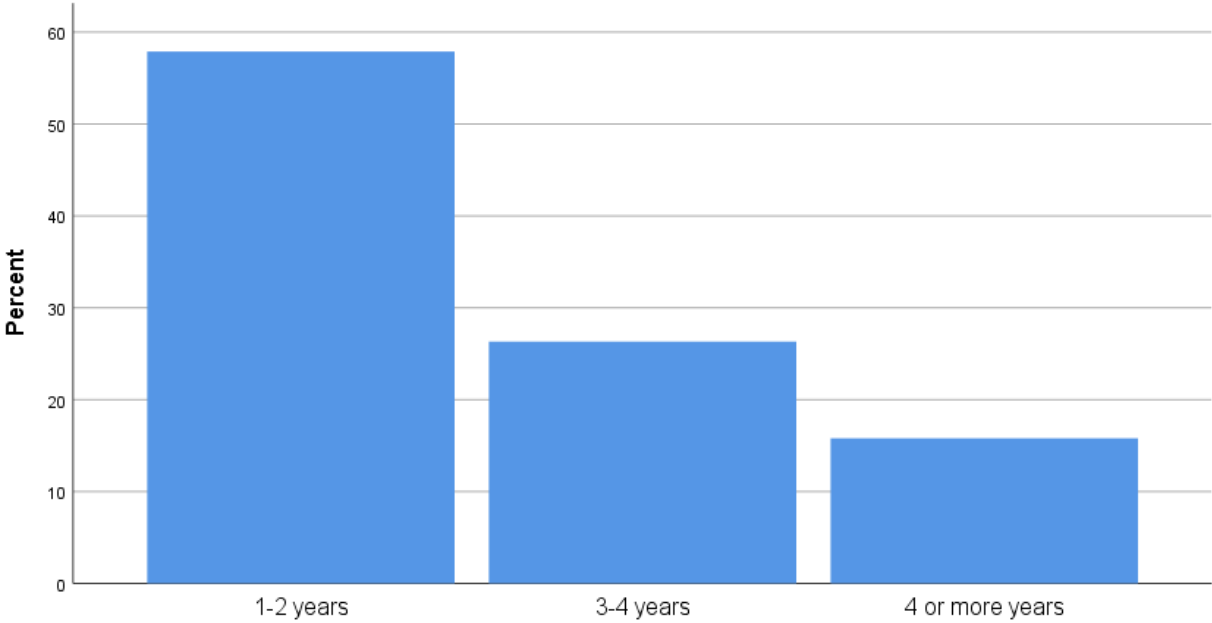presented in a better way in the graph represented in figure 2.

Figure 2: Participants' experience

Table 4 presents the results of the question on the most requested assistance when taking a MyChart call. It is clear that 100% of the respondents stated that the most sought assistance by their patients was login issues.

Table 4: The most requested assistance when taking a MyChart call

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Login issues	19	86.4	100.0	100.0
Missing	System	3	13.6		
Total		22	100.0		

Results on the most requested assistance is presented in a graphical way in figure 3.

Figure 3: Most sought assistance when taking a MyChart call

Table 5 displays results on the devices used by the patients when making a password reset request. The percentage of participants was 73.7% and 26.3% for cell phones and computers respectively.

Table 5: Devices preferred by participants when making password reset requests

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cellphone	14	63.6	73.7	73.7
	Computer	5	22.7	26.3	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

The above results can be presented in the graphical form as shown below.
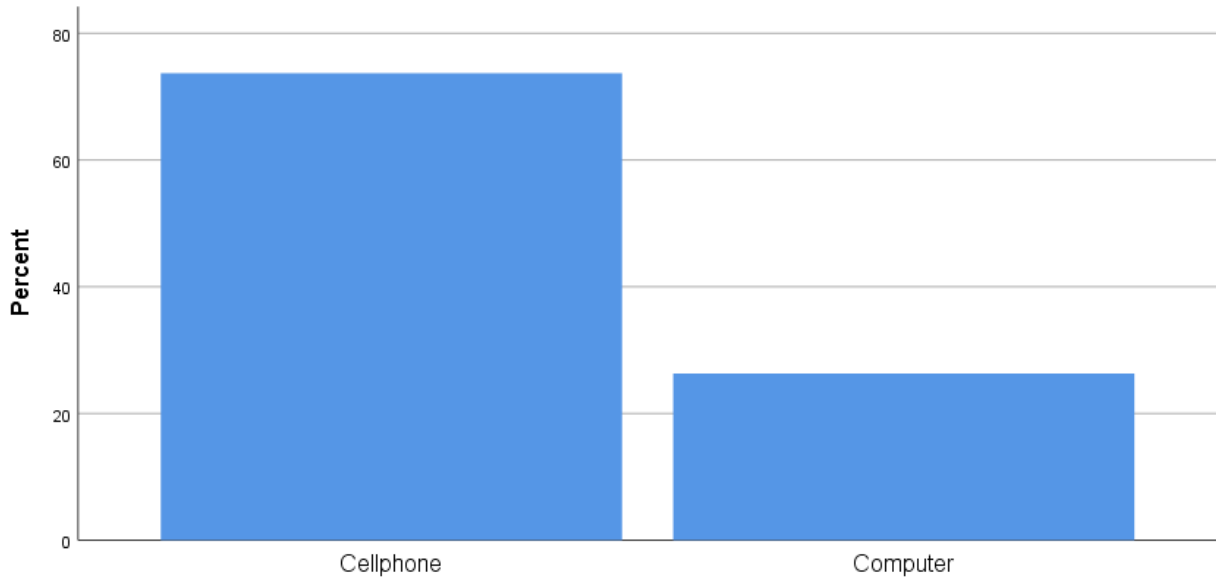
Figure 4: Devices preferred during password reset requests

The results presented in table 6 captured the percentage of people who try to log into the wrong website when a patient/caller calls back after having their password reset.

Table 6: Individuals who attempt to log into the wrong website

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	22.7	26.3	26.3
	2	10	45.5	52.6	78.9
	3	4	18.2	21.1	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

The above results can are presented in a better way in the graph presented in figure 5.
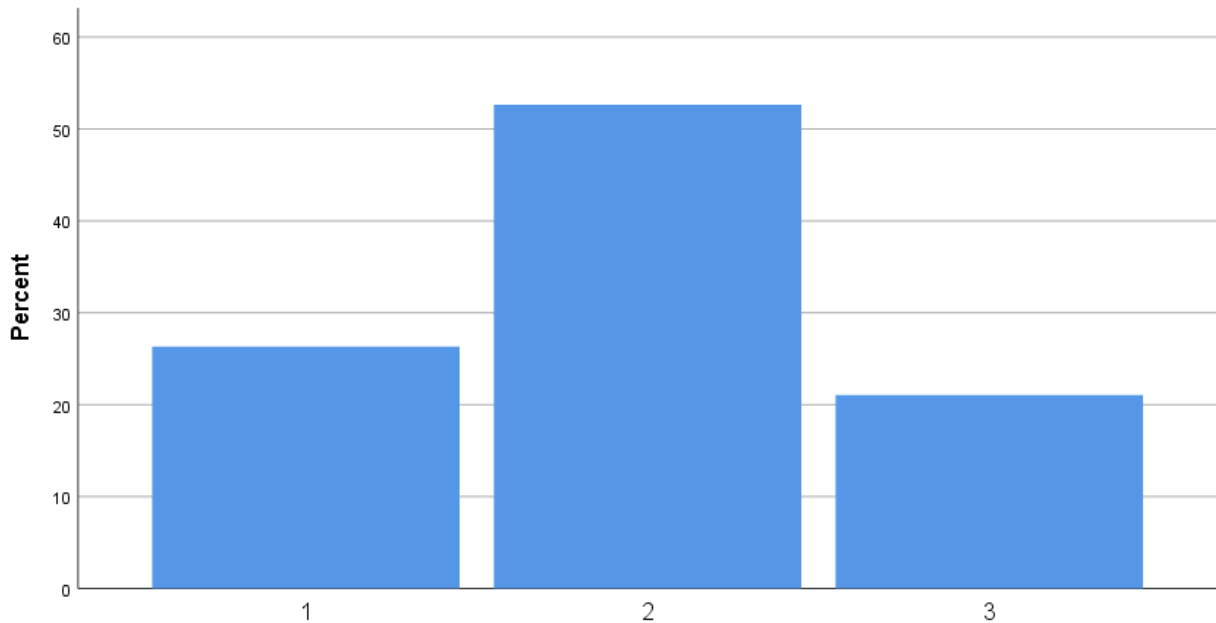

Figure 5: Individuals who attempt to log into the wrong website

The results presented in table 7 captured the percentage of those who try to log in via

MyChart App when a patient/caller calls back after having their password reset.

Table 7: Individuals who attempt to log via the MyChart App

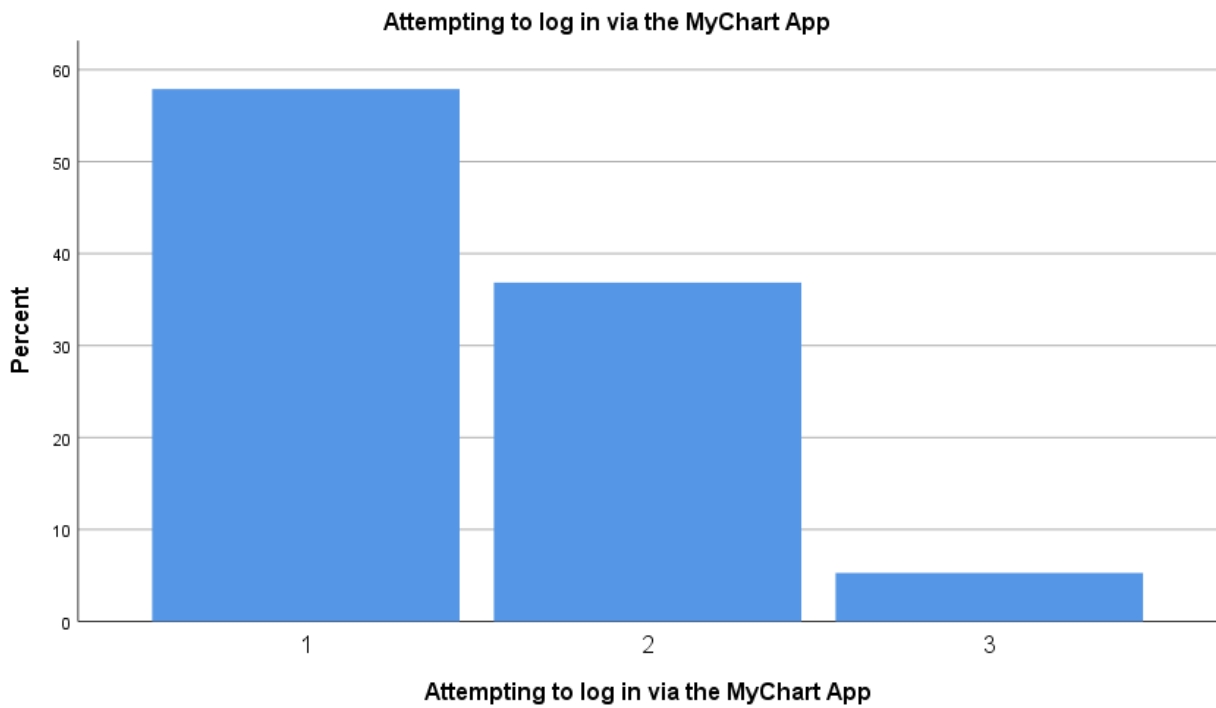|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	50.0	57.9	57.9
	2	7	31.8	36.8	94.7
	3	1	4.5	5.3	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

Figure 6: Individuals who attempt to log in via the MyChart App

The results presented in table 8 captured the percentage of people who requested help
with navigating inside of MyChart.

Table 8: Individuals who request help with navigating inside of MyChart

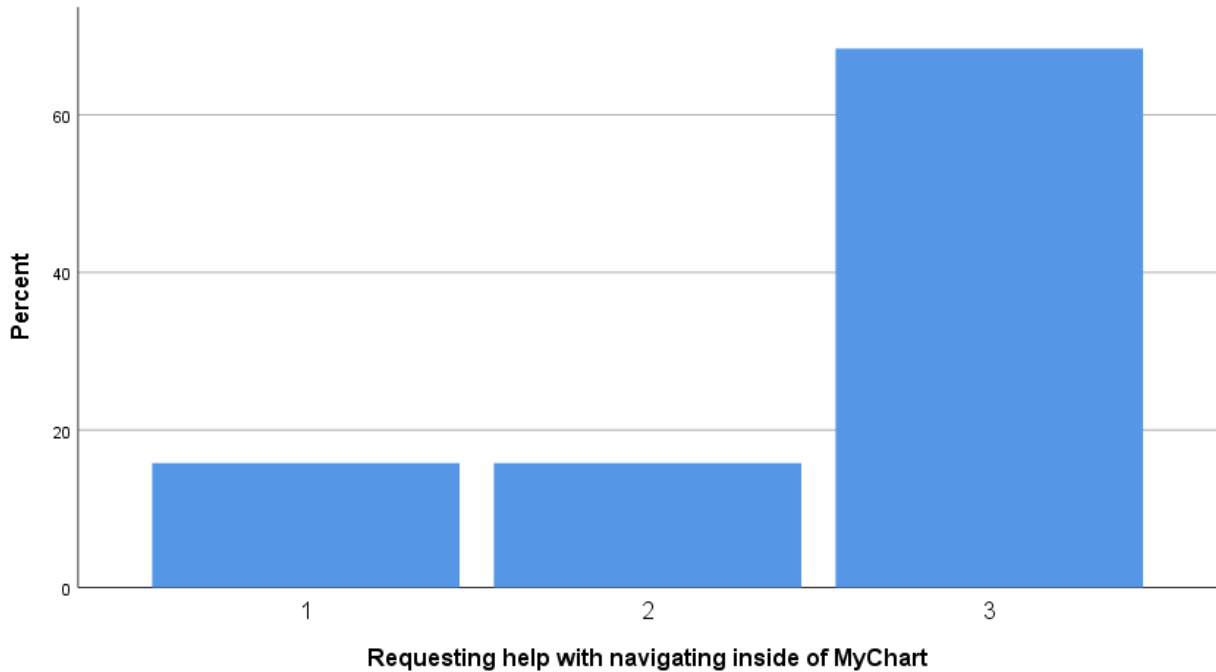|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	13.6	15.8	15.8
	2	3	13.6	15.8	31.6
	3	13	59.1	68.4	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

Figure 7: Individuals who request help with navigating inside of MyChart

Table 9 shows the results the results of the question on the level of satisfaction of the

patients with the login process. 54.5% of the help desk agents stated that their patients are

satisfied with the login process. 13.6% of the participants stated that their patients are frustrated

with the login process while 18.2% of the participants affirmed that their patients are indifferent about the login process.

Table 9: Level of patients' satisfaction with the log in process

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Satisfied with the login process	12	54.5	63.2	63.2
	Are Frustrated with the login process	3	13.6	15.8	78.9
	Indifferent about the login process	4	18.2	21.1	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

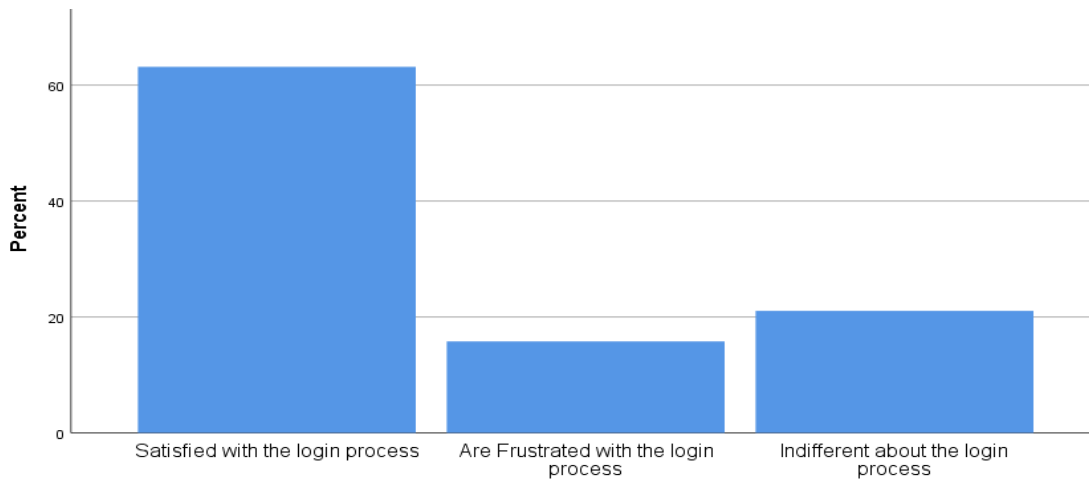The figure below is a graphical representation of the results described above.

Figure 8: Level of patients' satisfaction with the log in process

Table 10 shows the responses provided by the participants about the average age of their MyChart patients. 5.3% of the participants stated that their patients had and an average age

of between 19 and 30 years. 31.6% of the participants were aged between 31 and 49 years while

63.2% of the participants were aged between 50 and 70 years.

Table 10: Average age MyChart patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Between the ages of 19-30	1	4.5	5.3	5.3
	Between the ages of 31-49	6	27.3	31.6	36.8
	Between the ages of 50-70	12	54.5	63.2	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

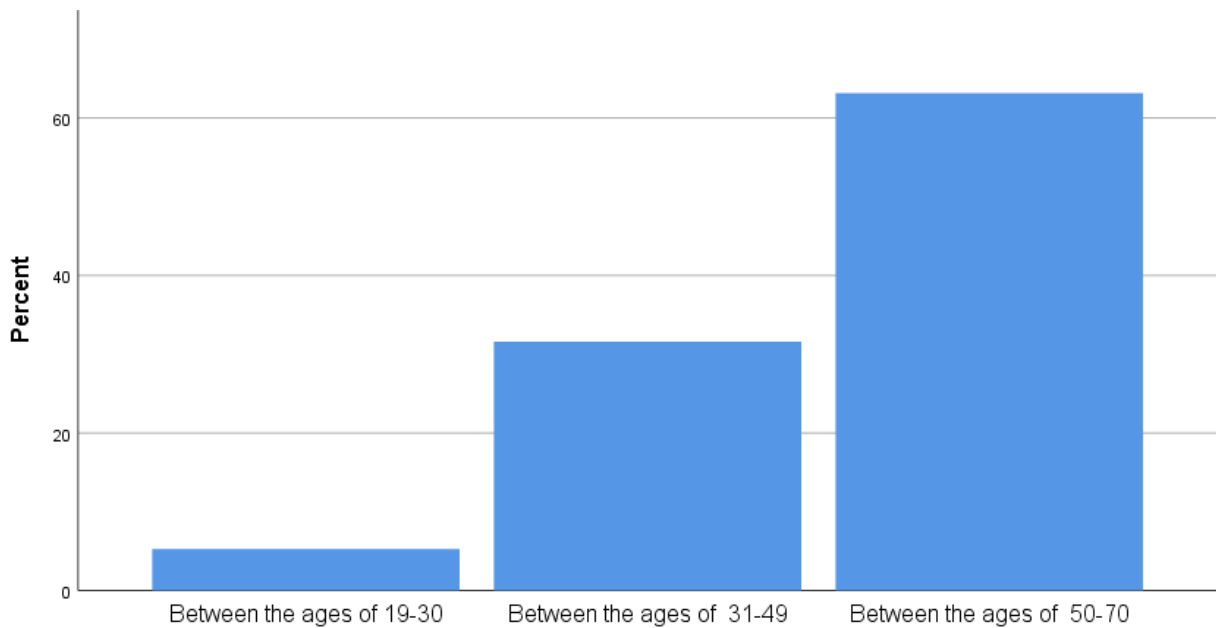The information provided in table 10 is presented in a better way in figure 9.

Figure 9: Average age of MyChart callers

Table 11 captures the number of participants who thought that their patients are

comfortable with the use of MyChart portal.

Table 11: Individuals who are comfortable with the use of MyChart portal

26.3% of the agents responded that 25% of the patient that they have assisted are comfortable with using the MyChart portal, 31.6% responded that 50% of the patient they have assisted with MyChart are comfortable with its use while 42.1% of the respondents responded that they are comfortable with using the MyChart portal.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25%	5	22.7	26.3	26.3
	50%	6	27.3	31.6	57.9
	75%	8	36.4	42.1	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

The above information presented above is graphically in the figure below.
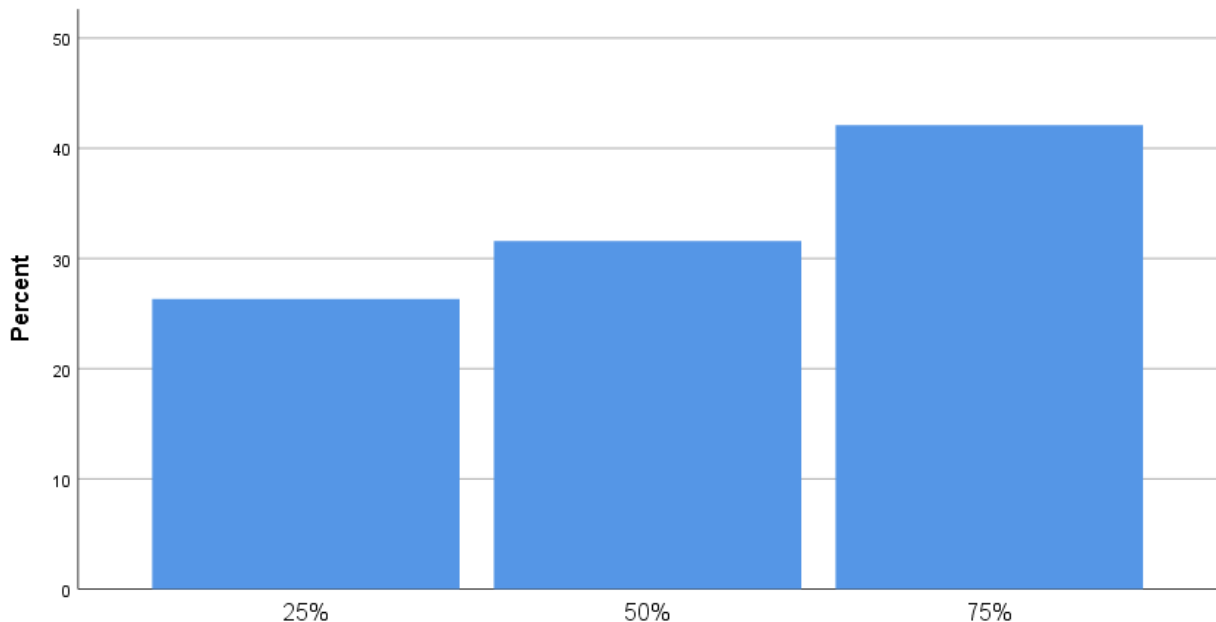
Figure 10: Individuals who are comfortable with the use of MyChart portal

Table 12 is a representation of the individuals who feel uncertain using MyChart portal

10.5% of the respondents say that the 75% of the patient that they have assisted with MyChart access has reported feeling uncertain when using the MyChart Portal. 21.1% responded that 50% of the patients that they have assisted with MyChart access has reported feeling uncertain when using the MyChart Portal. 68.4% of the respondents say that the 25% of the patient that they have assisted with MyChart access has reported feeling uncertain when using the MyChart Portal.

Table 12: Individuals who feel uncertain when using MyChart Portal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25%	13	59.1	68.4	68.4
	50%	4	18.2	21.1	89.5
	75%	2	9.1	10.5	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

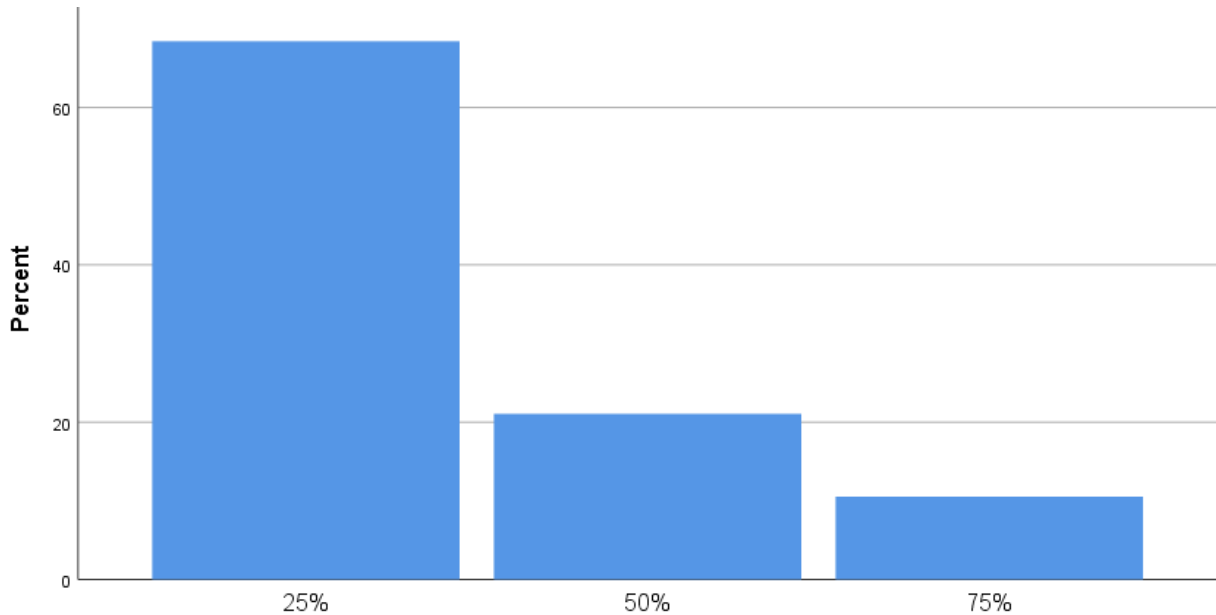The graph below is a better representation of the information in table 12.

Figure 11: Individuals who feel uncertain when using MyChart Portal

Table 13 is important in presenting the results of the individuals who feel pressured to use MyChart portal.

15.8% of the respondents say that the 75% of the patient that they have assisted with MyChart access has reported feeling pressured to use MyChart portal. 26.3% of the respondents say that the 50% of the patient that they have assisted with MyChart access has reported feeling pressured to use MyChart portal. 57.9% of the respondents say that the 25% of the patient that they have assisted with MyChart access has reported feeling pressured to use MyChart portal.

Table 13: Individuals who feel pressured to use MyChart portal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25%	11	50.0	57.9	57.9
	50%	5	22.7	26.3	84.2
	75%	3	13.6	15.8	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

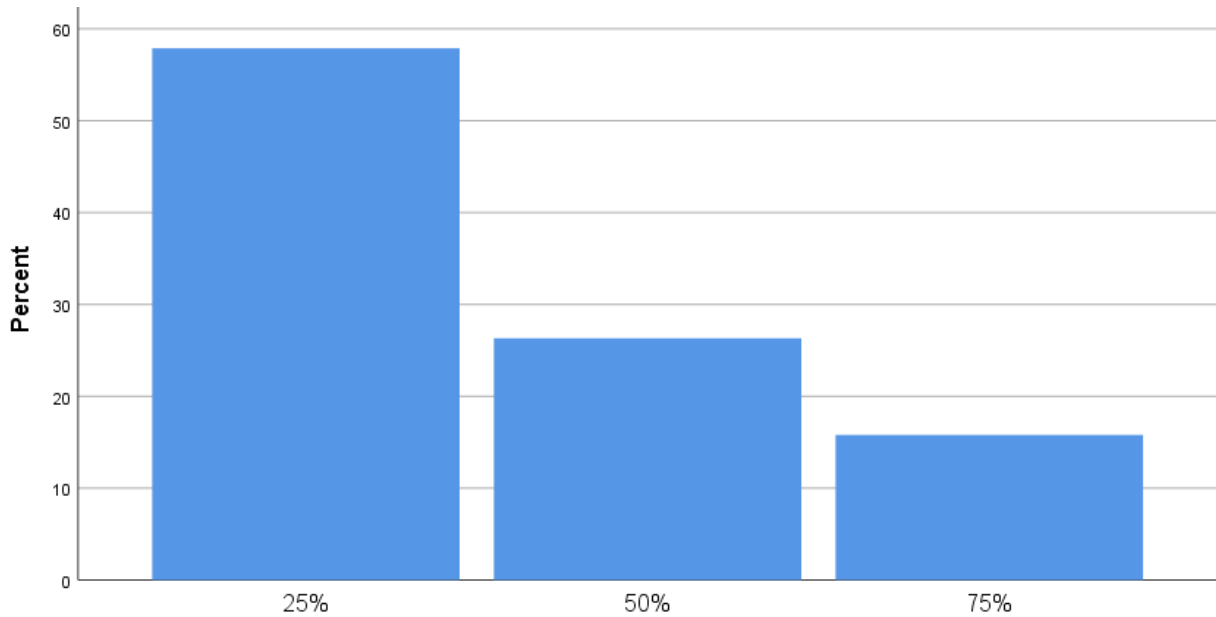The graph below is a better form of presenting the above results.

Figure 12: Individuals who feel pressured to use the MyChart portal

Table 14 shows the results obtained through the question on the major barrier to the access of MyChart portal by patients. 94.7% of the participants stated that lack of computers or phone skills is the major barrier to the use of the MyChart portal by patients while 5.3% of the participants were of the idea that difficulty in spelling was the major barrier.

Table 14: Major barrier to the access of MyChart portal by patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of Computer/phone skills	18	81.8	94.7	94.7
	Difficulty with Spelling	1	4.5	5.3	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

The data on table 14 is presented in the figure below in a graphical way.
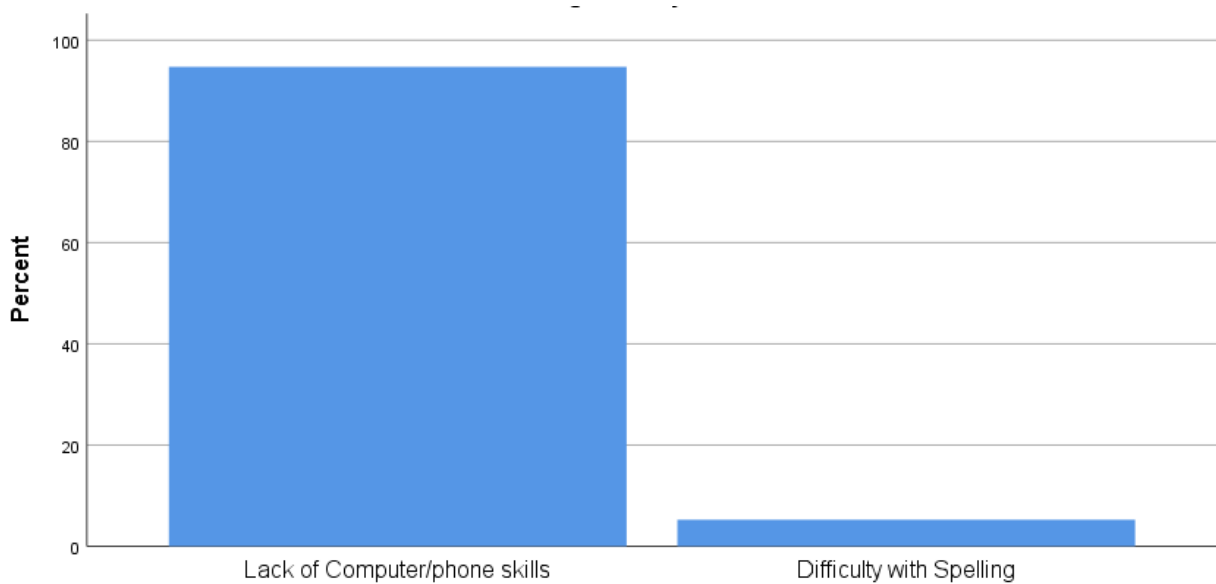

Figure 13: Major barrier in the access of MyChart portal

Results of the question on whether the callers are reluctant to give help desk agents

identifying information required in the access of MyChart account are presented in table 15.

68.4% of the participants stated that their patients are not reluctant to give out their identifying

information as they are aware that the identifying information is used by the help desk agents in

the protection of the patients' records. On the other hand, 31.6% of the participants stated that

their patients are very reluctant to give out their identifying information.

Table 15: Readiness/Willingness of callers to give out their identifying information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, very reluctant	6	27.3	31.6	31.6
	No, they seem happy that we are securing their records by verifying their personal information	13	59.1	68.4	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

The graph below is a better representation of the data above.
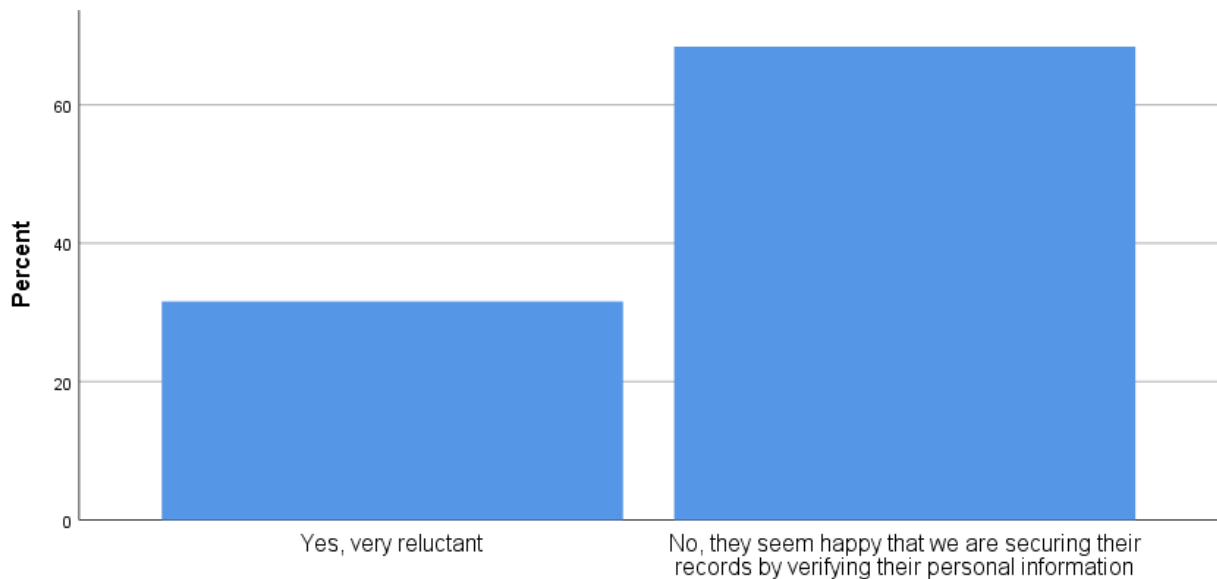
Figure 14: Readiness of callers to give out their identifying information

Table 16 presents the results on the question on what happens when a caller is requesting

access (login information) to another users MyChart account and proxy access is questioned by

the help desk agent to the caller. 5.3% of the participants stated that their patients know what

proxy access is while 10.5% of the participants stated that their patients ask what proxy access is,

while 42.1% of the participants specified that their patients say that that have proxy access but

the patients do not have access, requiring the agents to provide introduction on how to get access.

Another 42.1% of the participants stated that their patients say that they have proxy access but do

not which requires the agent to advise them that the patients has to be the one calling for the

portal information.

Table 16: What happens when proxy access is requested

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Know what proxy access is	1	4.5	5.3	5.3
	Ask what proxy access is	2	9.1	10.5	15.8
	Say that they have proxy access, but you find that they do not have access and provide instruction getting the access	8	36.4	42.1	57.9
	They say they have proxy access, but they do not. Advise them to have the patient call in	8	36.4	42.1	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

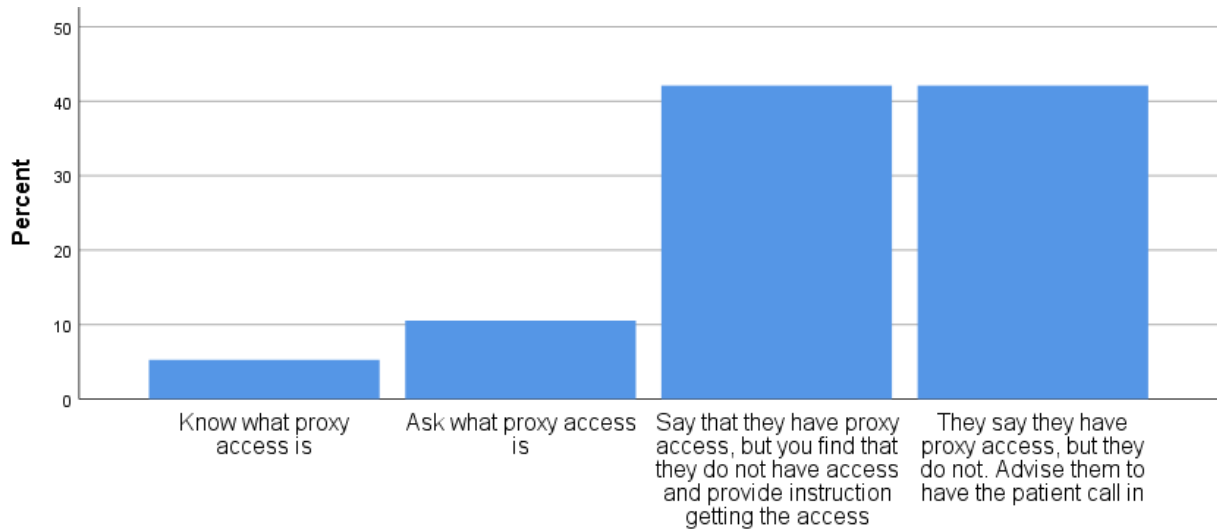The above information is graphically presented in the figure below

Figure 15: What happens when proxy access is requested

Table 17 shows the results of the question on what care agents look for when checking for proxy access in a patient's MyChart account. 84.2% of the participants stated that they look for a person's name that is a blue hyperlink while 15.8% of the respondents specified that they look for any name listed under suggested or emergency contact.

Table 17: What to look for when checking for proxy access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A persons name that is a blue hyperlink	16	72.7	84.2	84.2
	A person listed under suggested or emergency contac	3	13.6	15.8	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

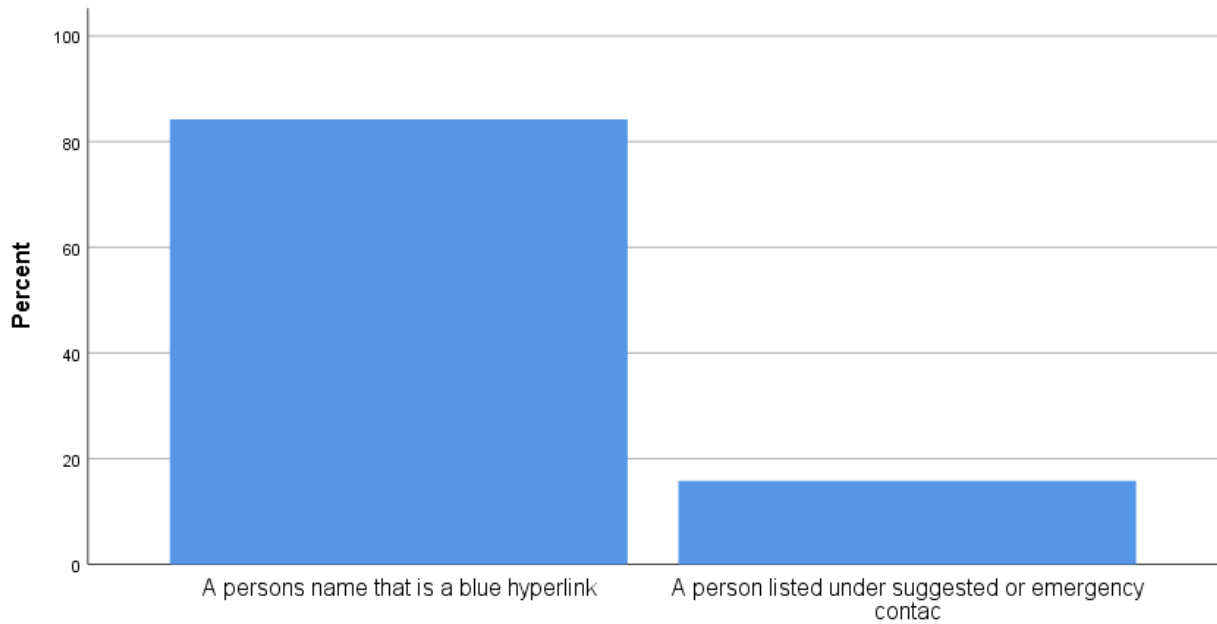Figure 16 is a graphical representation of the results in tabel 17.

Figure 16: What agents look for when checking for proxy access in a patient's MyChart account

Table 18 shows the results of the question that required the participants to share their

knowledge on how a patient must go about setting up the proxy feature for MyChart their

MyChart account. 21.1% stated that the proxy feature can be set by completing a form at the

provider's office only. 10.5% of the participants specified that this feature can be set by

completing the request inside the patient's MyChart account only while 68.4% of them stated

that the feature can be set by completing a form at the provider's office and by completing the

request inside the patient's account.

Table 18: How to set the proxy access feature

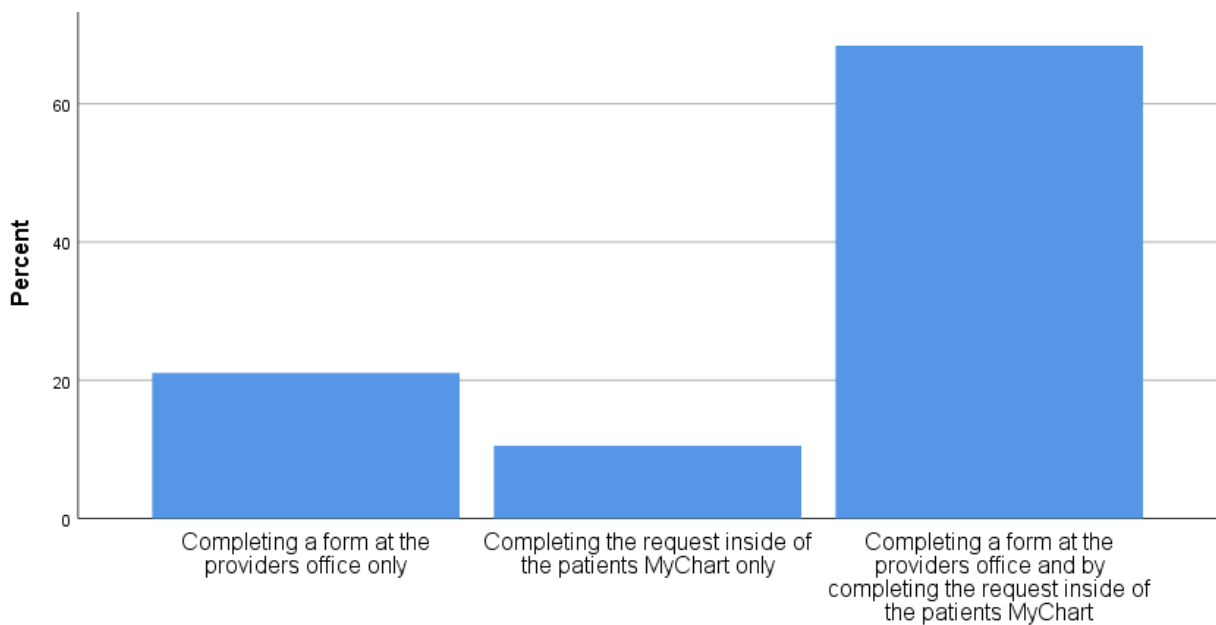|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completing a form at the providers office only	4	18.2	21.1	21.1
	Completing the request inside of the patients MyChart only	2	9.1	10.5	31.6
	Completing a form at the providers office and by completing the request inside of the patients MyChart	13	59.1	68.4	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

Figure 17: How to set the proxy access feature

Table 19 is a presentation of the results on the thoughts of the support agents on the recently implemented request for access (password reset). 15.8% of the participants stated that the new access is a better way to request for access since it gives them all the information they

need. 26.3% of the participants specified that the new access is better but requires them to

contact the patient to verify his/her identity since most identifying information is not provided.

Lastly, 57.9% of the participants thought that the new access is less effective as it requires them

to search for the patient's identity since most identifying information is not provided in the

email.

Table 19: Thoughts on the recently implemented access request via email

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A better way for request for access to be handled, I have all the information that is needed ...	3	13.6	15.8	15.8
	Better, but requires me to contact the patient to verify identify as most identifying information is not provided ...	5	22.7	26.3	42.1
	Less effective, as it requires me to look the patient up (most identifying information is not provided in the email...	11	50.0	57.9	100.0
	Total	19	86.4	100.0	
Missing	System	3	13.6		
Total		22	100.0		

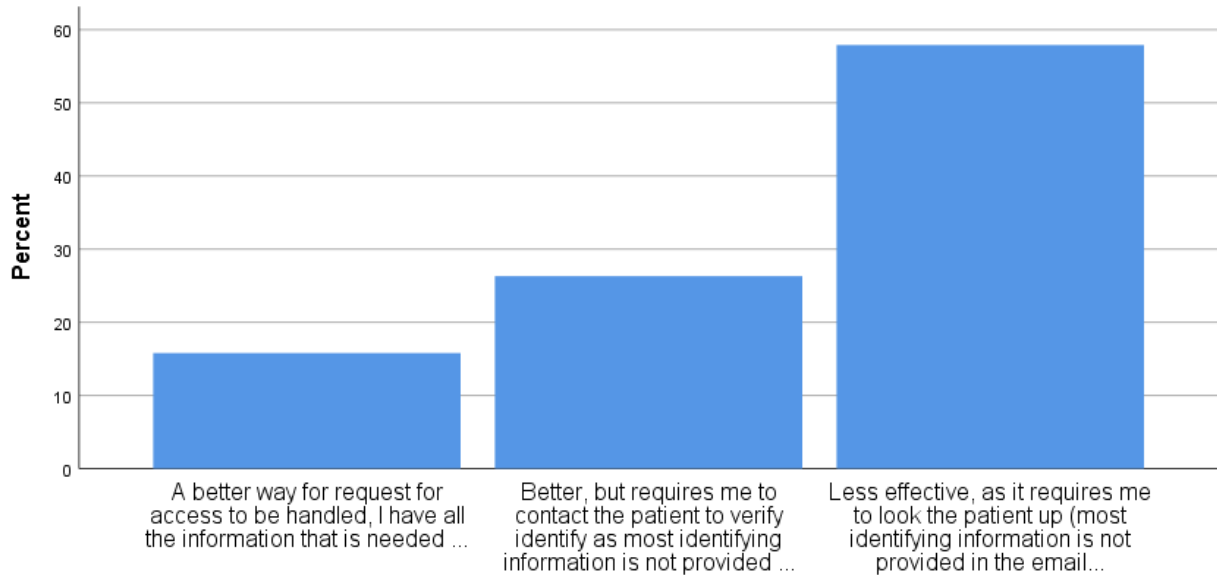The results presented on table 19 are graphically displayed in figure 18.

Figure 18: Thoughts on the recently implemented access request via email

4.3   Interview results

On the major issues hindering patients from accessing their MyChart portal, PPP1 stated,

"I find the lack of computer skills to be the major stumbling block as my patients attempt to

access their portals." PPP2 and PPP5 had the same to say on this question. Different arguments

were made by PPP3, who argued that, "Most of my patients are challenged by lack of cell

phones." The same assertion was obtained from PPP4.

On the level of patient satisfaction, PPP1 and PPP5 explained that their patients were

very satisfied with the process of accessing their MyChart portal. PPP2 stated that the patients

are somewhat satisfied with the access process while PPP3 and PPP4 explained that their patients

are not satisfied with the access process.

Regarding the question on age disparities all the participants agreed that older patients

seek help more than the younger patients. For example, PPP3 said, "Yes, help is sought by a

higher proportion the older population than the younger population."

When asked whether patients are reluctant when required to provide identifying

information that is required to access their MyChart account, three interviewees said yes while

two of them said no. For example, PPP2 stated, "Yes, patients find it hard to trust us with their

personal information."

When asked whether they experience proxy access challenges during patients' access to

MyChart Portal, all the interviewees said yes. For instance PPP4 argued, "Yes, I specifically find

it challenging to respect the rights of underage patients."

4.4   Summary

From the results presented in this chapter, it is clear that login issues are the major

stumbling block in the adoption and use of the Baptist One Care MyChart portal. Again, the use

of cell phones to access Baptist One Care MyChart portal is preferred over the use of computers.

The results have also indicated that a good number of patients attempt to log in to the wrong

website when attempting to access their MyChart portal while others find it difficult to navigate

the aspects of Baptist One Care MyChart portal. However, it is encouraging to note that more

than half of the participants stated that their patients are satisfied with the log in process. The

chapter has also revealed that lack of computer or phone skills is the major barrier to access of

MyChart portal. Further challenges identified in this chapter include authentication and literacy

level problems. Proxy access is also an issue that needs to be addressed.

5   Chapter 5: Conclusions and recommendations

5.1   Introduction

This chapter was developed with a goal of presenting a summary of the study findings, conclusions, study implications, and recommendations. Summary of the findings is a general overview of the results presented in the above chapter but done in layman's term. The conclusions section contains discussions of the results in relation to the available literature. Implications of the study section contain the significance of the results in terms of their importance. Finally, recommendations for future practice and studies are provided based on the findings of the study.

5.2   Summary of findings

The results from this study indicate that patients find it difficult to use the MyChart portal, especially due to the problems they experience when trying to access these portal. Specifically, it is clear that the major challenge is achieving proper login into the portal. Poor educational background that leads to poor spelling skills may make it hard for patients to log in into portal since even spelling the username or password correctly is a challenge. Even after password reset, the spelling mistakes and poor education background make it difficult for some patients to browse the right website when trying to access their portals. The results have also indicated that most of the patients at BMHCC seeking assistance with accessing their portals are aged between 50-70 years. Such individuals are mainly disadvantaged when it comes to the use of innovations such as patient portals since their health and digital literacy are relatively poor.

The results obtained in this study have indicated that most the helpdesk agents deal with patients with a low level of satisfaction in the use of MyChart portal. This can be attributed to the

fact there are many barriers hindering patients from having an easy time when trying to access

their MyChart portal. According to this study, lack of computer or phone skills is top in the list

of the possible barriers. As a matter of fact, some patients feel that they are pressured to use the

MyChart portal. According to some of the support agents studied, some patients are reluctant to

give out their identifying information. This is a major challenge for the agents since it can be

difficult to help the patient without properly identifying the caller/patient by verifying their

identity which information such as the full names, street address, date of birth and the last four

digits of their social security number.

Another set of barriers in the access of MyChart portal by patients has got to do with

proxy access, the study has indicated. Surprisingly, only 4.5% of the participants argued that

their patients understand what proxy access is. This is an indication that authorization of

individuals to access health information contained in another individual's MyChart portal is a

challenge for many support agents. What is more, as high as 72.8% of the participants stated that

their participants claimed to have proxy access when they did not have this access in real sense.

The problem is complicated by the fact that some support agents are not conversant with the

right way to obtain and confirm the proxy access feature.

5.3   Conclusion

The finds obtained in this study can be looked at with reference to the arguments made by

previous researchers in the same area of study. As seen in this study, the major barrier to access

of MyChart portal by patients is difficulties in achieving successful log in into the portal. This is

in line with the arguments made by Goldzweig et al. (2015) who stated that, even before patients

can start experiencing problems with portal navigation, gaining access of the interior aspects of

the portal through proper log in is a challenge to many.

The study results are clear that cell phones are used more than computers in the access of MyChart Portal. According to Goldzweig et al. (2015), smartphones are replacing the use of computers in Internet access, including their use in accessing health applications and sites. This trend has been attributed to the fact that smartphones are more convenient to use and carry around than computers. As a result, there use makes it easier for health systems to achieve some aspects of meaningful use by allowing the patient to access services at any location and at any time.

The study has indicated that the lack of computer or phone skills is the major barrier to the access of MyChart portal. These findings are similar to the findings of the study by Sarkar et al. (2017) in which poor education background was linked to difficulties in accessing the patient portal. Nevertheless, the study has revealed that a small number of participants are not able to access their portals due to spelling mistakes. This explains why some patients browse the wrong website even after password rest. Additionally, the poor education background of such individuals makes it difficult for them to navigate the internal aspects of the patient portal.

Closely related to the education challenge is the age problem. Most of the participants involved in this study indicated that their patients are aged between 50 and 70 years. Based on the assertions made by a number of previous researchers, this may be the reason for the challenges experienced in the access of MyChart portal. For example, Lober et al. (2016) affirmed that older members of the society have low levels of digital literacy need in the proper use of innovations like patient portals. Zickmund et al. (2015) added that, despite the fact that older patients are in great need of patient portals in the management of chronic diseases, their digital literacy does not allow them to do these with ease.

The diffusion of innovations theory views users' satisfaction with a new innovation as in important determinant of the speed of adoption and rate of use of the same innovation. However, the challenges experienced by individual patients in their efforts to access the MyChart portal explains why most of the agents studied stated that their patients are not satisfied with the access process. As a matter of fact, the study has indicated that some individuals feel that they are not comfortable with the use of patient portals and they are pressured to do so.

In line with the arguments made by Kruse et al. (2015), the study has indicated that trust issues can make it hard for patients to access their portals. This happens when the patient does not trust the support agent with identifying information needed before access to the portal can be guaranteed. According to the findings in this study, proxy access has become a stumbling block in the access of patient portals, mainly because a good number of patients are not even aware of the meaning and purpose of proxy access. In this regard, Kruse et al. (2015) argued that proxy access issues have become the main reason why access of health services by underage patients though patient portals is not easy.

5.4   Implications of the study

The study is expected to have an immense value to the academic fraternity and the government in general. Patients can use the results generated by the study to appreciate the value of patient portals in management of their disease conditions. Again, health systems should use this study as a source of a better understanding of why the use of patient portals becomes difficult right from the accessibility point. This project will also help the audience to gain a better understanding about the role that IT support plays in helping a healthcare organizations meeting the some requirements specified in the meaningful use criteria. With a better insight into the challenges that using patient portal present to those who use it most, relevant authorities can

purpose to remedy this problem. The study is also important in filling the gap in literature about

the major barriers in the access of patient portals.

5.5   Recommendations

Based on the results obtained from this study, several recommendations can be made. To

begin with, healthcare corporations should invest more on improving access to their patient

portals to reduce cases where patients get frustrated when trying to access these portals. The best

idea is to make the portals as user friendly as possible. Since digital and health literacy levels

have been identified as some of the factors influencing the access of patient portals, health

organizations and other relevant parties should consider providing training on basic access

principles. Both digital and hardcopy manuals should be produced to reach as many potential

users as possible. To overcome issues related to proxy access, health corporations must ensure

that part of this training includes a section on the definition and the need for proxy access. Again,

proxy access and security policies should be improved and changes circulated to all help agents

and patients. These will guarantee the patients that their information is secure in the hands of the

helpdesk agents.

The study concentrated on the challenges experienced by patients as they access a single

patient portal, MyChart. To increase the reliability of results in future studies, it will be necessary

to include the experiences users of other patient portals. Moreover, more reliable results can be

obtained by making the actual portal users the point of interest in future studies. It will also be

necessary to increase the sample size in future studies to make it possible to generalize the results

to a large a bigger number of patient portal users.

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7   Appendices

7.1   Appendix A: Sample questionnaire

Introduction

The aim of developing this questionnaire is to collect data aimed at determining the barriers in the use of patient portals at Baptist Memorial Healthcare Corporation. Kindly feel free to fill all the questions in the questionnaire since security and privacy will be guaranteed.

1. How long have you been assisting patients/callers with accessing their Baptist MyChart?
    A. 1-2 years
    B. 2-4 years
    C. 4 or more years
2. When taking a MyChart call, the most requested assistance is?
    A. Log in issues
    B. Others (please specify)
3. From your experience, which devices are being used by the callers/patients when calling into have their password reset?
    A. Cell phones
    B. Computers
4. When a patient/caller calls back after having their password reset, which of the following do you see the most?
    A. Attempting to log in into the wrong website
    B. Attempting to log in via the MyChart App
    C. Requesting help with navigating inside of MyChart
5. I find that most of my MyChart callers/patients are?
    A. Satisfied with the log in process
    B. Are frustrated with the login process
    C. Indifferent about the login process
6. What is the average age of your MyChart callers/patients?
    A. Between ages of 19-30
    B. Between ages 31-49
    C. Between ages 50-70
7. From my observation while assisting patients/callers with accessing their MyChart account, I have noted (rate each option).
    A. That they are comfortable with using MyChart portals
    B. That they feel uncertain about using MyChart portals
    C. That they feel pressured to use MyChart portals
8. In your experience, which of the following would you say is a major issue that is a barriers hindering patients accessing there MyChart?
    A. Lack of Computer/phone skills
    B. Difficulty with Spelling

9. In your opinion, are callers reluctant to give you the required identifying information that is required to access their MyChart account?
    A. Yes, very reluctant
    B. No, they seem happy that we are securing their records by verifying their personal information

10. In your experience, what is most likely to happen when a caller is requesting access (login information) to another users MyChart account and proxy access is questioned by you to the caller, Does the caller;
    A. Know what proxy access is
    B. Ask what proxy access is
    C. Say that they have proxy access, but you find that they do not have access and provide instruction getting the access
    D. They say they have proxy access, but they do not. Advise them to have the patient call in

11. When checking for proxy access in a patient's/caller's MyChart what are you looking for?
    A. A person's name that is a blue hyperlink
    B. A person listed under suggested or emergency contact

12. Proxy access is a feature of MyChart that can be setup by;
    A. Completing a form at the providers office only
    B. Completing the request inside of the patients MyChart only
    C. Completing a form at the providers office and by completing the request inside of the patients MyChart

13. From your experience, Do you think that the request for access (password reset) to MyChart via email that was implemented this year is:
    A. A better way for request for access to be handled, I have all the information that is needed
    B. Better, but requires me to contact the patient to verify identify as most identifying information is not provided
    C. Less effective, as it requires me to look the patient up (most identifying information is not provided in the email

7.2   Appendix B: Interview guide

Introduction

The purpose conducting this interview is to collect data meant to determine the barriers to the access of MyChart portal by patients at Baptist Memorial Hospital Care Corporation. Your honesty throughout the interview will be appreciated.

1. Which are the major issues hindering patients from accessing their MyChart portal?

2. Explain the level of satisfaction in the access to MyChart portal among your patients.

3. Are there age disparities among the individuals in need of help in accessing MyChart help? Kindly explain your answer.

4. Are callers reluctant to give you the required identifying information that is required to access their MyChart account? Explain your response.

5. Do you experience proxy access challenges during patients' access to MyChart Portal? Kindly explain your answer.