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Patients' Perspectives of Quality Care With the Use of Health Technology

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This is to certify that the doctoral dissertation by

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Walden University
2022

Abstract

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by

Stacie Campbell

MSN, Walden University, 2016

ADN, Owens Community College, 2011

Dissertation Submitted in Fulfillment

of the Requirements for the Degree of

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Abstract

More and more patients are using health technology to monitor their care and collaborate with their health care team. However, few studies address the patient’s perspective on the benefits of these health technologies. This descriptive qualitative study aimed to explore how health information technology contributes to the quality of care received from the patient perspective. The Institute of Medicine’s (IOM's) conceptual framework of quality care informed this study. Five participants were interviewed by telephone and resulting transcripts were coded using Tesch’s eight steps of coding. Themes emerged that were aligned to the six concepts identified by the IOM. From the patient perspective, the themes identified were, including the participants perceived health information technology as providing safe measures of care, impacting the effectiveness of care, providing patient-centered discharge, providing faster access to care and information, working with staff to improve efficiency, and improving the equitability of care. Overall, the patients perceived that health technology had a positive impact on their care. Social change has already occurred from the use of health technology in the areas of better patient outcomes and patient education. The information provided by this study will be shared with my network of peers, health care settings, and educational institutions. With increased awareness of the benefits of health care technology as outlined in this study, increased use of health care technology may continue to lead to improved quality of patient care.

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Dedication

I dedicate this research to my supportive family, Greg, Kendra, Colin, Conor, and Carson. Additionally, I am thankful for my mom, Charlene, and my siblings and nieces. They are the reason I was able to continue my education and to advance my career. It is said that it takes a village. In this case it took my village to support me through my education. My husband, Greg, was an amazing support system through the trials and benefits of this pathway. My mom, Charlene, and daughter, Kendra, helped with watching the little ones so I could work on homework. And the little ones gave up time with Mommy to allow me to complete my studies. Thank you for helping me grow in my profession and education. I love you all.

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I would like to acknowledge the amazing faculty at Walden University. The instruction and support given from Dr. Lewis and Dr. Crawford allowed me to keep a positive attitude and encouraged me to keep moving. Despite the challenges that came with the dissertation process, I always felt supported by them. I welcomed two babies during this process, and Dr. Lewis and Dr. Crawford were very supportive when explaining the dissertation terms and allowing me to manage my family. Thank you both for providing the knowledge, strength, and dedication to assist me in completing this journey of my education. I am grateful for your dedication.

I would also like to acknowledge my coworkers for their continued support and encouragement. They were always willing to help and provide opportunities for me to complete work or spend time with my family.

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Chapter 1: Introduction to the Study

The term "health technology" was first used in the mid-1960s and was further developed as technology took an increasing role in patient care (J. Wong, 2014). According to J. Wong (2014), influential health care members published articles that led to the emergence of evidence-based practice. Evidence-based studies showed that medical practice in scientific evidence improved individual patient outcomes; health care technology has been a subject of evidence-based practice since this time (J. Wong, 2014). Recent events such as the Health Information Technology for Economic and Clinical Health (HITECH) Act and the coronavirus pandemic have increased the use of health technology among patients and have changed how quality care is visualized.

A review of health information technology literature indicated content related to patient perceptions of health technology, the Institute of Medicine (IOM) framework, and a gap related to health technology and quality care. A focus on patients' perception indicated that patients who use health technology are more likely to participate in their care. Patients who are more engaged with their care through health technology are more likely to research their health care condition, monitor their care, and collaborate with their health care team resulting in improved outcomes (Roberts et al., 2017). With the passing of HITECH Act, requirements were put into place that were meant to have an impact on patient care (HealthIT, 2019a). Patients are the focus of health care, and their perception of how health technology affects their care needs to be considered. There were limited studies that had addressed quality care related to health technology from the patient perspective. Implications for social change could occur at the patient and family level, community level, organizational level, institutional level, and cultural level. The purpose of the current study was to gather qualitative data on patient perceptions of quality care related to the use of health information technology while hospitalized. This chapter focuses on the background of the phenomenon of quality care, the gap in knowledge, the research problem and purpose of the study, and the conceptual framework and nature of the study.

Background

This review of the background research focuses on patient outcome, patient perception, IOM framework, and the gap in literature. The types of studies fell into categories related to health technology adaptation, patient quality care surveys, qualitative literature, and patient perception. These categories are also addressed in the literature review.

Patient Outcome

Four of the articles reviewed indicated improved outcomes and understanding of patient disorders. Patients have better outcomes with an understanding of quality care and the use of health technology (Pyron & Carter-Templeton, 2019; Soriano et al., 2019; Wright, 2015). Roberts et al. (2017) reported that patients who were engaged with their care through health technology were more likely to research their health care condition, monitor their care, and collaborate with their health care team resulting in improved outcomes.

Patient Perception

Literature gaps were identified on quality care from the patient perspective and on care provided in the hospital setting. Aarts et al. (2015) and Asan et al. (2016) gave insight to the qualitative approach and concepts related to quality care. Asan et al., Martin et al. (2020), Mwachofi et al. (2016), Pyron and Carter-Templeton (2019), and Wu et al. (2016) completed qualitative studies exploring the patient perception of quality care in the physician’s office setting and suggested the need for further research in the hospital setting and from the patient perspective. Better patient outcomes with the use of health technology and a need for further research from the patient perspective were reported by Hamann and Bezboruah (2020) and Soriano et al. (2019).

The HITECH Act included measures to require technological advancements in medical facilities to address privacy and security measures and provide meaningful use with health technology (Maria, 2012). With the passing of the HITECH Act, patients became the focus of quality care in different medical settings. Patient perceptions of quality care are identified through hospital surveys that identify quality care needs, provide hospital funding, and provide continued resources and support (Medicare, n.d.). Recent events such as the pandemic have increased the need for health technology at home and in the inpatient setting with the use of telehealth services. M. Wong et al. (2021) completed a study of 50 countries and found that all 50 countries had a significant increase in the use of telehealth during the coronavirus pandemic. The perception of patients needed to be studied to provide and improve quality care in the hospital setting.

IOM Framework

The IOM framework of quality care was researched for quality care indicators. The IOM and the Agency for Health care Research and Quality (AHRQ, 2020) reflected on the IOM framework for guidance of policies and changes. Neves et al. (2018) used the IOM framework to explore how quality care related to the health technology of the electronic health record (EHR). Neves et al. found that the use of health technology had an impact on the IOM framework of quality care domains. Neves et al.'s study related to the patient's understanding of health technology by showing how patients' care improved by providing patients with access to health care technology of EHRs. Neves et al. were able to characterize the benefits and risks of patient engagement with health technology by mapping the characteristics to the IOM framework of quality care. I used the IOM framework to provide guidance throughout the current study and in designing the interview questions.

Gap in Literature

With a review of related literature, I found a gap in knowledge regarding patients' perspective of quality care related to health technology in the hospital setting. Of the studies searched, 17 articles suggested the need for further studies on quality care related to health technology in the hospital setting, 16 studies suggested further research from the patient's perspective, 17 studies found that health technology was related to patient quality outcomes, and 10 studies suggested the need for continued research on quality care. Aarts et al. (2015), O. U. Daniel (2018), Martin et al. (2020), Mwachofi et al. (2016), and Wu et al. (2016) suggested further studies of quality care in the hospital setting. Asan et al. (2016), Soriano et al. (2019), and Pyron and Carter-Templeton (2019) suggested a need for further studies related to the patient perspective of quality care related to health technology~~.~~ Sowell et al. (2018) completed a systematic review that indicated that countries where patient organizations reported their perspectives of health care technology had a more structured and transparent health care system. Findings from the systematic review indicated a gap in knowledge from the patient's perspective regarding health care technology in the United States more so than in European countries.

The focus of the current study was to explore quality care related to health technology from the patient's perspective in the hospital setting. With my review of the background and supporting articles, information was shared on the importance of quality care and health technology. A more detailed review of the literature can be found in the Chapter 2. Underexplored research in quality care, patient perception, health technology, and the hospital setting showed that further study was needed to fill the gap on patient perception of quality care. Therefore, I researched the patient's perspective of quality care related to the use of health technology in the inpatient hospital setting.

Problem Statement

The HITECH Act set standards and programs to promote quality health care, health care safety, and health care efficiency using health information technology (HealthIT, 2019a). Reports from Campanella et al. (2015), Mwachofi et al. (2016), and Neves et al. (2018) showed that health technology has an impact on patient quality care; the researchers focused on the use of EHRs, patient portals, or patient care technology. These studies reported improved quality care in communication, time management, patient outcomes, and management of care. Campanella et al. completed a systematic review and meta-analysis of EHRs on quality care. Forty-seven articles were included in the systematic review. All of the articles focused on quality care perspectives outside of the patient point of view. Several studies in the systematic review indicated that the use of health technology in health care can improve hospital efficiency and patient satisfaction rating. Mwachofi et al. encouraged further study of quality care and health technology from the patient point of view, sharing that patients can make a distinction between the role of technology and the human side of care.

Campanella et al. (2015) and Mwachofi et al. (2016) identified a need to understand how patients perceive quality care with the use of health technology. Pyron and Carter-Templeton (2019), Roberts et al. (2021), Sowell et al. (2018), Soriano et al. (2019), and Wright (2015) reported that how patients perceive health technology can affect their outcomes. Studies completed using health technology showed an understanding of health technology improved social support online (Roberts et al., 2017), improved patient engagement (Neves et al., 2018), and improved transparency of health care (Sowell et al., 2018).

Demeke et al. (2020) and M. Wong et al. (2021) completed studies on the health technology of telehealth and found an increase of patients using telehealth at home during the coronavirus pandemic. Demeke et al. and M. Wong et al. suggested a need for continued studies on the patient’s use of telehealth due to the global increase of the technology. Furthermore, studies by Hart et al. (2020) and Rosenbluth et al. (2020) showed that technology use has increased in the inpatient setting with the use of technology for patients to communicate with family during hospital coronavirus restrictions. Jain et al. (2020), Roberts et al. (2017), and Roberts et al. (2021) reported that patients limited the term “health care technology” to computers for charting, cellphones, and internet use. With a potential barrier of knowledge in the patient understanding of the term health care technology and a variety of technologies covered by the term health care technology, interview questions for the current study addressed what participants considered to be health information technology. Open-ended questions were asked to learn participants’ perspectives of the patient during their hospital stay.

The literature gap indicated that patient perception of quality care was underexplored. The HITECH Act described how patients are experts in quality care and their perceptions are used through surveys to promote care. Studies reviewed such as Jain et al. (2020), Demeke et al. (2020) and M. Wong et al. (2021) showed improved patient outcomes, knowledge, and social support. With further exploration on patient perception of quality care with technology, agents of change may promote patient perception to improve patient outcomes, promote patient understanding of their health, and encourage social health support. Current study findings may be significant to nursing with patient satisfaction impacting the health care setting through financial reimbursement, health care jobs, and patient outcomes such as length of stay in the hospital. Education may be given to follow up care and support to encourage the patient’s recovery process.

Purpose of the Study

The purpose of this study was to explore the perceptions of patients related to the impact of health technology on the quality of the care they received during a hospitalization within the last year. The World Health Organization (2020) described health technology as “the application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems to improve the quality of lives” (para. 1). Technology use can vary among hospitals, doctors’ offices, clinics, and other health care settings. Common terms of health technology seen in the literature were electronic health records, patient portals, communication devices, technology used to give care such as blood pressure cuffs, bedside technology, computers, and bed alarms. Participants in the current study were given the World Health Organization’s definition of health technology as well as examples of health technology used in the hospital setting.

The IOM found through a study on quality definition that 100 different definitions of quality were submitted (IOM (US) Committee on Quality of Health Care in America, 2001). Key domains were created to categorize different types of quality care, and these groups were presented in the IOM framework of quality care. The IOM framework of quality care defines quality care from the six domains of care: safe, effective, patient centered, timely, efficient, and equitable. Interview questions in the current study were developed from the IOM framework to investigate the patient perception of quality care.

Research Question

How does health information technology contribute to the quality of care received from the patient perspective?

Conceptual Framework

The IOM domains of health care quality care are significant in providing measures to improve quality care in the health care setting. The IOM framework was first published by the IOM (US) Committee on Quality of Health Care in America in 2001. The IOM framework set expectations for the U.S. health care system, patient–clinician relationships, incentives for quality improvements, and patients' perspectives of care.

The IOM framework of six domains for health care quality guided the current study and supported development of the interview questions. The IOM reported that patients who are educated and understand the six domains of quality care can see the meaning of measures more clearly, understand how they relate to their health concerns, and show better patient outcomes in the hospital setting (IOM Committee on Quality of Health Care in America, 2001). The IOM found through a study on quality definition that 100 different definitions of quality were submitted. Key domains were created to categorize different types of quality care, and these groups were presented in the IOM framework of quality care. The IOM framework of quality care defines quality care from the six domains of care: safe, effective, patient centered, timely, efficient, and equitable. In the current study, interview questions were developed from the IOM framework to investigate the patient perception of quality care. Interview questions were asked reflecting each of the six quality care domains (see Appendix A). If a participant had a question about a domain, the IOM domain definition was given.

The IOM framework aligned with the current study's inquiry into patient perceptions of quality care. These domains provided the definition of quality of care and guided development of the interview questions. The AHRQ (2018) presented the six IOM domains and their definitions:

1. Safe: Avoiding harm to patients from the care that is intended to help them. Interview question example: When you think about safety, can you describe how health care information technology may have impacted the safety of your care?
2. Effective: Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit Interview question example: Can you describe how health care information technology may have impacted the effectiveness of your care?
3. Patient centered: Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions. Interview question example: When thinking about your care and how your own individual needs were met, how did health care information technology help to make the care you received more responsive to your personal needs and values?
4. Timely: Reducing waits and sometimes harmful delays for those who receive and those who give care. Interview question example: A goal for health care is to reduce delays. Can you describe how health care information technology impacted the timeliness of your care?
5. Efficient: Avoiding waste, including waste of equipment, supplies, ideas, and energy. Interview question example: In addition to the timeliness of care, we are also interested in the efficiency of care. How did health care information technology impact the efficiency of your care?

6. Equitable: Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status. Interview question example: When we describe health care equity, we are considering race, gender, and other social factors of care, including economic. How did health care information technology impact the equity of your care?

Nature of the Study

I used a descriptive qualitative approach. A descriptive qualitative approach aligned with the purpose of this study to explore experiences of how patients perceive quality care related to the use of health technology. This study involved the use of individual interviews conducted over the phone to gather data from a sample of participants who had been hospitalized within the last year. Flyers were placed in the health care settings to recruit five to 10 participants until data saturation was met. Data saturation was met at five participants. Interview questions asked in this qualitative study were aimed at identifying patients' perceptions of the ways that technology contributed to their care. The IOM's framework of quality care includes six domains that were used for creating interview questions: safe, effective, patient centered, timely, efficient, and equitable care. Questions were created on quality care and technology by mapping the questions to the IOM quality care framework.

Interviews were completed by phone. Inclusion criteria for participants included being over the age of 18, able to participate in an interview, and hospitalized within the last year. Exclusion criteria included any acute or chronic condition that would have limited the ability of the patient to participate in the study or would have impeded their inability to give informed consent. Health care workers were excluded from the study.

Participants who met the inclusion criteria were invited to participate in the study. Participant recruitment was facilitated from convenience sampling and snowball sampling. Recruitment flyers were left at a local critical access hospital in the outpatient setting and wellness center. The outpatient setting consists of family medicine, follow-up inpatient physicians, support group meetings, and outpatient care center. Flyers were passed out to friends, families, and coworkers to distribute to participants whom they may know. Secondary recruitment was conducted using the Walden University participant pool. Data saturation was met at five participants recruited from the health care setting flyers and the use of snowball sampling. With the use of phone interviews, I hoped that a diverse population from different geographical locations would be included.

Data collection occurred in order of invitation responses from participants who met the inclusion criteria. I anticipated that five to 10 volunteers would be needed to attain data saturation. Five participants were recruited to ensure data saturation. Once saturation was met, remaining volunteers were informed that they did not need to participate, and they were thanked for their interest. Semistructured interviews with open-ended questions were conducted (see Appendix A). Interviews were completed via phone and were recorded using Microsoft Voice Recorder. The recording tool required a personal identification number and password to access the saved audio. Field notes were created immediately after each interview.

Interviews were transcribed and coded using Tesch’s (1990) eight steps of coding. Rev transcription service was used to convert interview audio to a transcript. Transcriptions were then uploaded to my computer. For any manual transcription data, a Microsoft Excel transcription template was used. Color coding, abbreviating, labeling, and categorizing were used to organize data.

To ensure the security of data, I saved all information on a password-protected computer in a password-encrypted folder. Ethical considerations included a through explanation of the purpose of the study to participants, the completion of consent forms by participants, and the use of security measures to protect collected data. Tesch’s (1990) eight steps of coding were used for data analysis:

- getting a sense of the whole
- picking one document at a time to explore the meaning
- listing all topics and clusters
- abbreviating the topics as codes
- finding the most descriptive wording and turning them into categories
- making a final decision on abbreviations
- assembling data into one place, performing preliminary analysis, and recoding existing data if necessary

Definitions

Electronic health records (EHR): EHRs are a digital version of a patient’s chart providing health organizations with accessible patient data. EHRs are a type of health technology created to allow broader access to patient care (HealthIT, 2019b).

Health technology: The World Health Organization (2020) described health technology as “the application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems to improve the quality of lives” (para. 1).

Health Information Technology for Economic and Clinical Health (HITECH) Act: The HITECH act established programs to improve health care quality through the promotion of health technology (HealthIT, 2019a).

Meaningful use: Health technology being used in a meaningful way. The Centers for Medicare and Medicaid Services (CMS, 2020) use meaningful models to improve quality care, engage patients, improve the coordination of care to improve public health, and ensure privacy and security of patient health information.

Patient portals: Online websites or apps that give patients access to personal health information and allow patients to communicate with their health care providers (HealthIT, 2017).

Telemedicine: Also known as telehealth, telemedicine includes electronic technologies to provide information between a patient and doctor from different locations (Health Resources and Services Administration, 2021).

Assumptions, Delimitations, and Limitations

Assumptions

Assumptions were that the participants would be honest in answering their interview questions and that participants would be honest in describing themselves in terms of the inclusion and exclusion criteria. There was also an assumption that participants shared a similar experience and had used health technology during a hospitalized visit. Assumptions about myself came from working in the health care field. I had preconceived notions of quality care and how patients feel about the use of technology. Bracketing was used to mitigate the effects of preconceptions of the research topic (see Tufford & Newman, 2021). Ravitch and Carl (2016) described bracketing as using a formal visual process to identify personal opinions, biases, and language. By examining my assumptions through bracketing and following Tesch's (1990) steps for coding, I mitigated researcher bias in this study.

Delimitations

I explored the experiences of patients' quality care related to health technology while in the hospital. Delimitations included restricting the scope of the study to the hospital setting. Aarts et al. (2015), Asan et al. (2016), and Mwachofi et al. (2016) found that the studies available at that time were conducted outside of the hospital setting and recommended further studies to be completed in other settings such as the hospital setting. The current study focused on patient experiences in the hospital setting. I limited the participants to individuals at least 18 years of age who had been hospitalized in the past year. By narrowing the study to a hospital setting and a certain group of patients, I attempted to fill the gap in the literature.

Limitations, Challenges, and Barriers

Consent was needed from each participant for the individual interview. Participants were given time to review study information and ask questions prior to giving consent. One possible issue to consider was the participant's sharing of personal medical information. Although the study focused on the patient's experience with quality care and the use of health technology, people may have overshared. To protect patients' rights, consent was required for each participant. Another consideration was that I was raised in, lived in, and worked in a rural area. Participants may have been patients that I had had in clinical or in my job at the hospital. The informed consent document addressed this possibility and described how participant privacy would be protected. Participants' information was kept confidential, and no names were used in the final documents. Participants' information was kept in a password-protected computer and a password-encrypted file only I had access to. Information will be destroyed 5 years after the study completion. Electronic data will be permanently deleted, and paper data will be shredded.

Significance

A study conducted by the National Institute of Health (2007, as cited in Aiken et al., 2008) showed that by improving care environments, nurse staffing, and nurse education, approximately 40,000 patients per year could be saved in the United States. Seventeen articles reviewed indicated that health technology related to patient outcomes. With the passing of the HITECH Act, improved patient quality care with the use of health technology can increase incentives received by hospitals. According to 16 studies and additional articles found relating patient outcomes to quality care and health technology, patient outcomes may be improved. Understanding a patient's perception of the health technology in the inpatient hospital setting may help to determine the impact that health technology has on quality measures from the patient perspective.

Positive social change may come from gaining an understanding of how patients perceive quality care related to the use of health technology. There are potential implications for change at the patient and family level, community level, organizational level, institutional level, and cultural level. Within the community, resources may need to be provided to assist patients in their care and recovery. Medical equipment may be obtained by patients from a medical supplier. The health care community may need to consider health information technology as medical equipment to assist with patient care and financial aid. A search of five medical suppliers near me showed no health information technology available for purchase or rent. A consideration for hospitals would be in the equity of care, such as whether the hospital portals are free and open to all individuals in the community.

Within an organization, a patient’s length of stay may be decreased if health information technology can be used at a patient’s home to assist in the monitoring of care (Kelley & Roberts, 2021). Future studies could address how the length of a patient’s stay is influenced by health technology. At the institutional level, the family can be used to support patient care with the use of technology in the home and hospital setting. Studies from Aiken et al. (2008) and M. K. Daniel et al. (2017) showed improved quality care related to the use of health technology, and hospitals can be educated in health technology techniques to improve quality care. From my experience working in the field, nurses want to gain knowledge in how to improve quality care given to patients when using health technology such as EHR, patient portals, and patient care technology. Health care providers have the potential to provide follow-up care and support recovery with the use of health information technology. During the COVID-19 pandemic, patients and families communicated with each other and medical staff through health information technology. Studies by Hart et al. (2020) and Rosenbluth et al. (2020) showed that technology use increased in the inpatient setting with the use of technology for patients to communicate with family during hospital coronavirus restrictions.

At the cultural level, community agencies may be involved in the care to add the support networks patient may need, and may contribute to patient recovery and quality of life. An example of health information technology used for cultural care can be seen with the use of MARTTI (2022). MARTTI is a translation service provided through health information technology. MARTTI allows hospitals and patients access to translators in 250 languages, American sign language, and hard of hearing support 24 hour a day 365 days per year. MARTTI uses technology such as an electronic pad to call a translator to communicate with the patient and provider, communicate with a specialist, and connect to language-specific support groups.

At the institutional level, improved satisfaction with medical facilities and staff may be seen with health technology, quality care, length of stay, and communication. Hospitals measure quality care with surveys such as a Hospital Consumer Assessment of Health care Providers and Systems (HCAHPS). HCAHPS is a survey administered by the CMS and the AHRQ to measure patient perspectives. Reports are made public on topics such as communication, staff responsiveness, care transition, cleanliness and quietness of the hospital, hospital rating, and hospital recommendations (Medicare, n.d.). Hospital HCAHPS are reported publicly. Reviewing local hospitals HCAHPS in the last 8 years, I observed a decrease in quality care reports since the implementation of health technology related to EHR, patient portals, and upgraded patient care technology. By reporting the results of this study to coworkers, peers, and local medical students, I may promote positive social change by supporting quality care within the community.

Summary

Quality care is measured in the hospital by patient quality care surveys. With the implementation of the HITECH Act, it became necessary to understand how health technology influences the patient’s perception of quality care. In Chapter 2, a literature review is presented that shows the relevance of the patient perception of quality care related to health technology.

Chapter 2: Literature Review

The purpose of this study was to gather qualitative data on patient perceptions of quality care related to the use of health information technology while hospitalized. Chapter 2 provides a review of recent literature on the topics of quality care, health technology, and the IOM quality care framework. The literature review comprised articles, journals, consumer reports, and editorials. The literature was obtained from research at Walden University Library, Google Scholar, ProQuest, the American Nurses Association, AHRQ publications, the Scientific Advisory Group of Experts, and the National League of Nursing. Most articles reviewed were published within 5 years of the start of this study. The IOM Committee on Quality of Health Care in America (2001) is referenced due to being the original contributor for the IOM framework of quality care. The purpose of the current study was to explore the experiences of patients related to the use of health technology on quality of care during a hospitalization within the last year.

Different keywords and phrases were searched related to *patient perception of quality care in health care*, *quality care related to health technology*, *patient perception of quality care in the hospital*, *qualitative study on quality care and health technology*, *descriptive qualitative study on quality care and health technology, IOM framework, HITECH act*, *patient care surveys in the hospital setting*, *health technology adaptation in the hospital*, *technology in health care*, and *patient perspective*. An annotated bibliography was created of articles similar in content, framework, method, and data analysis. Criteria for search inclusion included articles that were published within the last 5 years, were focused on quality care, addressed health technology or a type of health technology such as EHR, and included a patient health care setting. Exclusion criteria included articles that were more than 5 years old, articles that were outside of human patient care, and articles that focused on health technology without involving patient care. I excluded search terms that did not meet criteria for my study. Exclusion search criteria included searches of pediatric patients, mental health care settings, and tertiary care.

The review is grouped by framework, health technology adaptation, patient quality care surveys, qualitative literature, and patient perception. The strategy for the literature review search was a focus on quality care and health technology. Each article was grouped according to relevance. In some cases, there was little research, such as with the keyword health technology. In the cases of little research, I replaced terms to be more specific, such as using a type of health technology. Examples of specific health technology searched were EHR, patient portals, bed alarms, and telemedicine.

Institute of Medicine Framework of Health Care Quality

The IOM published two reports reflecting on the quality of care of the United States health care system. The first report released in 2000 by the IOM was *To Err Is Human: Building a Safer Health Care System*, , which focused on patient safety from accidental injury. The findings were reflected in the second IOM study in IOM framework of quality care. The IOM framework of health care quality was published by the IOM in 2001. The purpose of the current study was to look for areas of quality care improvement in the U.S. health care system. The focus of the study was on how the health care delivery system can be innovated and improved (IOM Committee on Quality of Health Care in America 2001). The study addressed several areas of improvement in quality care using health technology in the clinical care setting. The IOM framework includes six domains for quality improvement: safety, effectiveness, patient centeredness, timeliness, efficiency, and equity.

Neves et al. (2018) used the IOM framework of quality care to map the study to the quality of patient care. When patients were not included in care related to the use of EHR, Neves et al. found a decrease in quality care related to the six domains of the IOM framework. The study reinforced the need to explore gaps in knowledge related to health technology and quality care. Neves et al.'s study was completed in the urgent care setting. I focused my study on the inpatient hospital setting.

The AHRQ (2018) focused on the six domains of quality care reported by the IOM to develop guided measures to improve quality care in the health care setting and to improve patient understanding on what quality care is. I used the IOM quality care framework to guide my study on quality care related to health care informatics. The IOM framework provided a framework for quality care that promotes patient understanding of quality care through the creation of aims. Patients are now being turned to as experts in health technology through the creation of the HITECH Act.

Health Technology Adaptation

The HITECH Act was enacted in 2009 to regulate the use of health technology in health care settings (Release of Information, 2016). According to HealthIT (2019a), the HITECH Act works to establish programs to improve health care quality, safety, and efficiency using health technology such as EHRs and electronic security. Gensheimer et al. (2018) and Wright (2015) reported better patient outcomes with an improved understanding of health technology.

The HITECH Act provides incentives to hospitals for using health technology to support meaningful use requirements. The HITECH Act provides incentives such as financial reimbursement for initiating the use of health technology in the forms of EHRs, patient portals, electronically protected security measures, and improved quality care surveys (Release of Information, 2016). One incentive of the HITECH Act comes with the meaningful use of technology. The Centers for Disease Control and Prevention offer incentives for meaningful use; over a 5-year time frame, incentive payments ranged from $44,000 for Medicare providers to $63,750 over 6 years for Medicaid providers (Registered Nursing, 2020). Meaningful use with health technology is designed to improve patient quality care measures, communication, and IOM quality care framework measures. With the use of health technology in the hospital setting to improve patient quality care, the hospitals in turn receive incentives and reduced health care costs. Mennemeyer et al. (2016), Kim and Lee (2020), Gold and McLaughlin (2016), and Alder-Milstein and Jha (2017) found increased use in health technology in the health care setting due to the implementation of the HITECH Act and argued for improved patient understanding to promote quality care.

Quality Care Surveys

The IOM framework of quality care and the HITECH Act promote quality care and patient understanding using health technology. The HITECH Act provides incentives to health care facilities for promoting and using health technology (HealthIT, 2019a).

Patients are involved in the process through the completion of patient care surveys. The CMS (2020) identified patients as experts in identifying quality care measures with the use of patient care surveys. Surveys are completed at the national, standardized, and local level to identify the patient perspective of quality care received during the hospital experience (CMS, 2020). With the passing of the HITECH Act, patient surveys now include areas related to the IOM framework of quality care and health technology.

O’Hara et al. (2018) completed a study that identified patients as quality identifiers in the hospital setting. O’Hara et al. reported that patients provide insight to quality care and safety measures, and that the patients provide an alternative perspective to hospital care standards. Krol et al. (2015) reported that patient experiences are important quality indicators for the health care setting. Pyron and Carter-Templeton (2019) conducted a retrospective longitudinal study on the efficiency of hospital workflow with the use of health technology and found that there were direct changes to patient quality care in the urgent care setting. Pyron and Carter-Templeton supported the need for continued studies from the patient perspective to further support quality care outcomes.

Hospital Setting

Krol et al. (2015) identified that a patient’s experience is influenced by the type of health care setting. In quality care from the hospital setting, a standard is set for hospital patient experiences. For quality aspects, Krol et al. identified hospitals as the greatest influencer of patient care experiences compared to physicians’ offices, urgent care, and other health care settings. Farooq et al. (2016) argued that by determining patient satisfaction in the clinical hospital setting, patient satisfaction was improved for health care roles, health care facilities, and quality care. Studies by O. U. Daniel (2018) and Hamann and Bezboruah (2020) showed that positive quality care with health technology improved patient outcomes.

The CMS (2020) and Stein et al. (2014) reported that patients' perception of care is a key performance indicator and is used to determine payment incentives to hospitals. HCAHPS reported a relationship in complications and hospital care relationships, demonstrating higher complication rates with lower patient care experiences (Stein et al., 2014). The goal of the IOM and the HITECH Act is to improve the quality care rates with the use of health technology (AHRQ, 2020).

Asan et al. (2016) and Mwachofi et al. (2016) suggested a need for continued studies in quality care and health technology in different health care settings outside of physicians' offices. Mwachofi et al. completed an exploratory study on patient perceptions of the health technology EHR. Results showed improved patient outcomes in physicians' offices and supported the need for continued studies in other health care settings. Wu et al. (2016) completed a mixed- methods study on the use of health technology in different patient health care settings. Wu et al. reported that most of the health care technology was used in the hospital setting and determined a need to continue research in the hospital setting.

Qualitative Literature

Qualitative methodology is used to understand a phenomenon through analyzing data collected through concepts, opinions, or experiences (Merriam & Tisdell, 2016). I explored patients' perceptions of quality care related to health technology.

A qualitative study by Aarts et al. (2015) showed that patient experiences with the health technology of personal health community gave insight to quality care. Asan et al. (2016) explored patients' perceptions through a qualitative study on the use of health technology in physicians' offices. Through identifying patient perceptions on quality care and health technology, Asan et al., Mwachofi et al. (2016), and Martin et al (2020) determined that quality care had a correlation to health technology, communication skills, system security, and patient perceptions.

Soriano et al. (2019) conducted a qualitative, descriptive study to explore the experiences of nurse managers with health technology. Themes emerged from the study that showed improved quality care with the nurse managers use of health technology. Soriano et al. (2019) argued the need for future studies from the patient perspective to further improve on quality care with the use of health technology.

Patients' Perceptions of Technology in Health Care

Journal articles were reviewed that researched patient perceptions of technology in health care. An initial search of the keyword's *technology in health care and the patient perspective,* found that patient's considered health care technology to be the use of the computers, internet, and cellphones. Seçkin (2009), reported that health care information was the third most common internet search at the time. With the article being from 2009, I used the article and keywords to search for similar information within the last five years. Keywords from the article followed a search of *internet discussion, knowledge, and participation.*

In the background section of this paper, discussion was started on how the patient's understanding of health technology improved their outcomes. Pyron and Carter-Templeton (2019) reported that patients improved their understanding in health technology through the completion of electronic questionnaires and by using EHR in the registration process. The urgent care setting of the study showed improved patient flow, provider efficiency, and effectiveness. Additionally, publications by Roberts et al. (2017), Soriano et al. (2019), and Wright (2015) reported improved patient outcomes with the patient understanding of health technology. Roberts et al. (2017) found that patients were more likely to be involved in their care, research their conditions, and be compliant to care orders when the patient's used the health care technology available to their condition. For the participants in Robert's et al. study, they used technology related to tracking their diabetic condition, online support groups, and internet use for research; participant's that used the health technology available showed improved understanding of their condition.

Demeke et al. (2020), Hart et al. (2020), Rosenbluth et al. (2020), and M. Wong et al. (2021) reported increased health technology use in the form of telehealth with the coronavirus pandemic. Demeke et al. (2020) and M. Wong et al. (2021) reported increases of telehealth in fifty of the fifty countries used within their study. Hart et al. (2020) and Rosenbluth et al. (2020) reported the increased of telehealth used in the inpatient setting with the use of telecommunication to promote family- centered care and communication during the coronavirus pandemic.

Jain et al. (2020) completed a qualitative systematic review of thirteen articles. The systematic review focused on different technology used by patient's including web-based technology, mobile applications, digital versatile disc, virtual reality, and telehealth interventions. The systematic review found that patients were more likely to use the internet to research information on their health condition. Jain et al. shared that when using the internet patients became more confident in using other sources of technology such as online forums, peer support groups, and health condition research. Jain et al. identified barriers within the study as patient's lacking an understanding of the different technology available aside from information technology.

De Camargo et al. (2015) completed a study on new health care diagnostic technology for tuberculosis. The study by De Camargo et al. found that while health care providers and lab technicians reported interest in the technology that patients did not consider diagnostic tools a technology and were only concerned with the outcome. Further review of studies by Jain et al. (2020), Roberts et al. (2017), and Roberts et al. (2021), reported that patients limited the term health care technology to health care workers use of information technology, computers for charting, cellphone usage, and internet usage.

Further articles were found from the patient perspective on health care technology through using a search of the keyword's *patients, bedside technology, patient participation, patient engagement, and health care technology*. Roberts et al. (2021)

completed a quantitative study highlighting the role health care technology plays in facilitating patient engagement and improving care during hospitalization. The study had patients use a health care technology app to have patients order their own meals. The patients from this study were engaged in their own care by ordering meals and tracking their intake and outputs levels. The study found improved accuracy of records and improved satisfaction, with patient engagement. Roberts et al. (2017) completed a study on using technology to engage hospitalized patients. Roberts et al. found that there was a strong correlation between health technology and patient engagement to improved patient outcomes and satisfaction. Roberts et al. reported a stronger correlation to a lack of collaboration between hospitalized patients and health IT assistance.

Previous Approaches

Researchers have approached the issue of adding health information technology and quality care through steps such as the HITECH act, meaningful use, and the IOM framework. The Centers for Medicare and Medicaid services (2021) reported increased use of health information technology in the health care setting. The HITECH act was put into place to encourage the meaningful use of health technology and to promote the safety and security of health information (Health Information Privacy, 2017). Meaningful use focuses on objectives to promote quality care, and to provide an incentive program to hospitals (HelathIT, 2021). The IOM framework works as well to promote quality care for the patient as described in *Crossing the quality chasm: A new health system for the 21st century (2001)*. Weaknesses in the approaches can be seen in the gap of knowledge from the patient perspective.

With a gap of knowledge in the patient understanding of the term health care technology and the large number of technologies covered by the term health care technology, interview questions for this study examined what participants considered to be health technology, followedup by a definition of health technology, and examples of health technology from the interviewer to clarify a variety in forms of technology used in the health care setting.

Summary

In conclusion, a literature review was completed grouping articles into areas of framework, health technology adaptation, hospital setting, quality surveys, qualitative literature, and patient perception. Articles presented showed that there is a correlation between quality care and the use of health technology. Presented articles showed gaps of knowledge in quality care related to health technology from the patient perspective and in the hospital setting. With exploring the patient perspective, a qualitative method aligned with the phenomenon. In chapter three, methods of the research are further discussed.

Chapter 3: Research Method

The purpose of this study was to explore the experiences of patients related to the use of health technology on quality of care during a hospitalization within the last year. In Chapter 3, I address the research method. This chapter includes information on the research design, role of the researcher, methodology, and trustworthiness.

Research Method and Design

Research Question

How does health information technology contribute to the quality of care received from the patient perspective?

Research Method

The study approach was descriptive and qualitative in nature. The study involved the use of individual interviews to gather data from a sample of patients who had been hospitalized within the last year. Kim et al. (2017) described a descriptive qualitative approach as a research tradition that is used when the focus is on discovering who, what, and where experiences and insights are explored of a phenomenon. To ensure ethical standards, qualitative researchers examine credibility, transferability, dependability, and confirmability (DeChesnay & Bottorff, 2015). By addressing the experiences of participants regarding quality care related to health technology, the current study aligned with a descriptive qualitative approach.

Role of the Researcher

As a nurse, my current role in health care is that of a nurse educator and a medical-surgical nurse; these positions were examined for bias throughout the current study. Bracketing was be used to identify assumptions. Sutton and Austin (2015) shared that qualitative research requires reflexivity of the researcher to understand the researcher’s positions, subjectivities, perspectives, worldviews, and bias. In the current study, there were numerous roles for me as the researcher, including data collector, interviewer, and data analyzer.

The role of the researcher required me to explore the experiences, thoughts, and feelings of the participants (see Sutton & Austin, 2015). These experiences were explored through interviews and observations. Observations included verbal cues. Verbal cues from telephone interviews included responsiveness to interviewer, tone of voice, reaction to interview, patient statements, and hesitations. I also performed data analysis on data collected from the interviews. Interviews required the use of maintaining a semiformal manner, taking cues from participants, and gathering my thoughts and observations as field notes. As the data analyzer, my role was to provide for the perspective of the participants from the interviews, interpret and transcribe data from the standpoint of the participant, and code and identify themes from the participant experiences (see Sutton &Austin, 2015). I used the prospectus as a blueprint for study completion and an interview guide for the interview process.

Methodology

Participant Recruitment and Selection

Participant recruitment was facilitated from convenience sampling and snowball sampling. Convenience sampling includes sampling a nonprobable, convenient population for data (Elfil & Negida, 2017). Snowballing is a method to recruit with the use of participants to spread the word about the study (Saunders et al., 2018). Recruitment flyers were left at a local critical access hospital in the outpatient setting and wellness center. The outpatient setting consists of family medicine, follow-up inpatient physicians, support group meetings, and an outpatient care center. Flyers were passed out to friends, families, and coworkers to distribute to participants they may know. Secondary recruitment was conducted using the Walden University participant pool. The Walden participant pool allows Walden University students to post studies to recruit participants. The general population was recruited by posting the purpose of the study, volunteer requirements, time commitment, and contact information (see Walden University, n.d.). Data saturation was met at five participants, and the Walden University participant pool was not needed. Participants who expressed interest were contacted to identify their preferred contact method. Individual interviews were completed through phone interviews. Volunteers were contacted by e-mail or phone to discuss participation. If the volunteers met the inclusion criteria, they were invited to review and complete the consent form through SurveyMonkey. SurveyMonkey is a free online survey tool to collect data. Consent data were entered into SurveyMonkey by the surveyor, and a link was submitted to potential participants for consent. After participants completed the consent form, a time and date were set up for interviews.

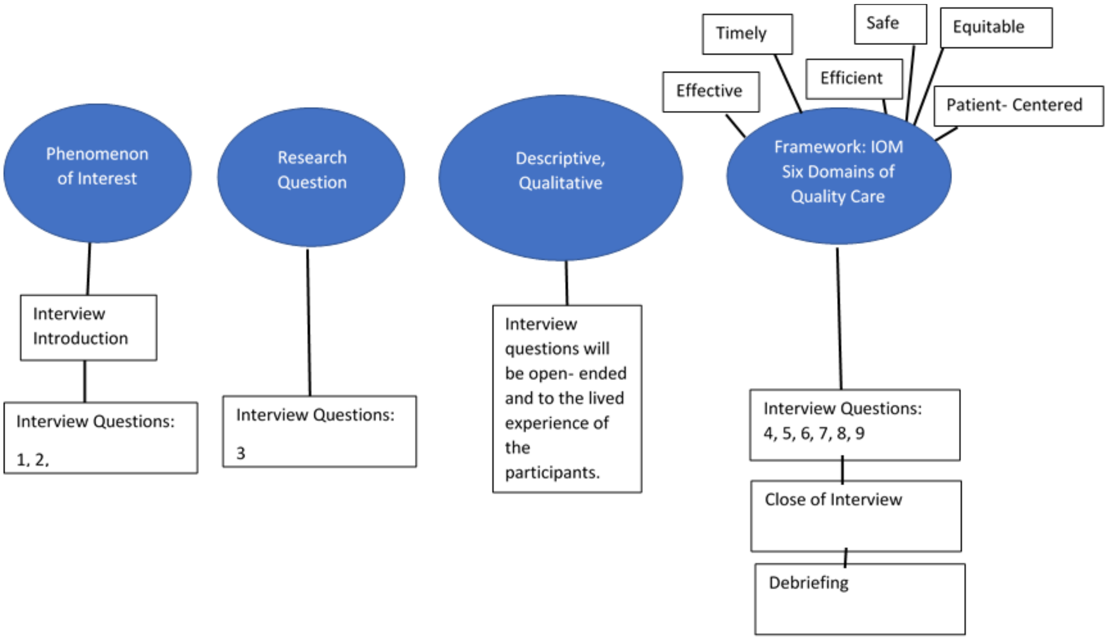
Patton (2015) and Rubin (2012) recommended interviewing participants until data saturation is met for the descriptive qualitative approach. Data saturation is the collection of information until no new information is discovered in the data analysis process (Saunders et al., 2018). Five participants were invited to participate, and five participants were sufficient to attain data saturation. Once saturation was met, remaining volunteers were informed that they were not needed to participate, and they were thanked for their interest. Participants were selected based on those who responded first and met inclusion requirements. If a participant refused to consent or did not meet inclusion criteria, the next participant to have responded was selected until data saturation was met.

Instrumentation

Data were collected during the interviews using Microsoft Recording. All data collected were stored on a password-protected computer in a password-encrypted folder. Methodological sources and the six domains of the IOM quality framework were used to develop open-ended interview questions. Campanella et al. (2015), Mwachofi et al. (2016), and Neves et al. (2018) presented questions related to the participants' experiences with quality care and health technology outside of the hospital setting. I reviewed these sources adapted my questions to the hospital experience. Questions from the six domains of the IOM quality framework focused on questions related to safe, effective, patient centered, timely, efficient, and equitable care (see Appendix A). Figure 1 shows question alignment with the interview guide and the IOM framework. The interview protocol included an introduction, framework questions, probe questions, closing of the interview, and a debrief (see Appendix A).

Figure 1

Interview Question Alignment



Pilot Testing

The Pew Research Center (2021) described how the creation of interview questions is important in accurately measuring opinions, experiences, and behaviors. A good foundation for creating questions involves writing good questions, organizing the questions appropriately, presenting open-ended questions for qualitative research, and expressing the meaning of the question so it is interpreted the same way by the participants (Pew Research Center, 2021). The Pew Research Center, Creswell and Creswell (2018), and Patton (2015) recommended the use of a pilot test to evaluate the usefulness of interview questions. Pilot tests are important in the research process to determine how participants are interpreting questions, to determine whether the order of questions influences the interview process, to gather feedback from participants on questions, and to estimate the time the interview process will take. Information from the pilot testing can be reviewed to make changes before using the information in the final interviews. A small sample of the population was used to pilot test the interview process in the current study. Pilot test participants were selected from family and acquaintances to complete three pretest interviews. Data gathered from the pilot test were only used to modify the interview process. No data gathered were used in the final study.

Three family members participated in the pilot test of the interview process. During the pilot test, I found interview questions that were confusing or misleading for the participants. I also found that the participants did not like the stating of health information technology with each question but preferred the stating of HITECH. The interview guide was updated, and participants were reinterviewed. The changes were accepted, and the interview guide was updated based on the participants' responses.

Data Analysis Plan

Qualitative data analysis is the process of the researcher organizing, transcribing, and processing qualitative data. The qualitative data analysis process can be completed manually using sources such as Microsoft Excel and Microsoft Word or electronically with the use of computer software. In the current study, transcripts from the individual interviews were used for the coding process. During the interview process, data were collected through phone recordings, and notes were taken in Microsoft Word. After each individual interview, the recording was turned off while a debriefing took place. Rev transcription service was used to convert audio from interviews to a transcript.

Transcriptions were uploaded to my computer. For any manual transcribing, data were transcribed to a Microsoft Excel transcription template.

Color coding, abbreviating, labeling, and categorizing were used to organize data. To ensure the security of data, all information was saved on a password-protected computer in a password-encrypted folder. The institutional review board (IRB 04-18-22-0513287) committee requires data be kept securely for 5 years then disposed of securely. The ethical considerations included age of patient, vulnerability of hospitalized patients, and medical information. Ethical protections throughout the data collection process included a through explanation to the participants, the completion of consent forms by participants, and the use of security measures to protect data collected.

A content analysis was used to analyze responses from the individual interviews. A Microsoft Excel template and color-coding method was used to identify themes and categories. Tesch’s eight steps of coding is often used for the coding process and was used in the analyses of data collected for this study. The eight steps of Tesch’s (1990) coding process are:

- getting a sense of the whole
- picking one document at a time to explore the meaning
- listing all topics and clusters
- abbreviating the topics as codes
- finding the most descriptive wording and turn them categories
- making a final decision on abbreviations
- assembling data into one place and performing preliminary analysis

- and, if necessary, recoding existing data

Using a manual approach to data analysis following Tesch’s (1990) eight steps of data analysis themes were identified and discussed in the following chapters. Each interview audio, transcripts, and notes were reviewed multiple times to get a sense of the whole. Then each participant’s transcriptions and notes were explored for the meaning individually. All topics from participants were then listed and clustered; next, the topics were abbreviated and listed as codes. Upon review of the codes, categories were identified: Each code was color coordinated to the appropriate category, and code abbreviations were listed next to the codes.

Manual Coding in Qualitative Research

Through courses at Walden University, Microsoft Excel and Word have been used for the qualitative coding process. Saldaña (2016) shared that manual coding allows for a different perspective of coding and that by handling data, the data gets moved from memory to records. For this study, manual coding was used. A Microsoft Excel template that was developed from previous research courses at Walden University was used to transcribe and analyze data. Color coding was used to identify categories and themes. For each participant, I listed a column with rows of each sentence transcribed. Each sentence was coded for a category keyword or phrase that was listed in column two of the template. Each different category was color coded to identify similar content. Each category was analyzed for common themes shown in color coded keywords listed in the third column of the template. By using color coding on the form categories, themes were easily identified. Considerations used in choosing a data analysis approach included the cost and comfort of the approach. With having limited experience with manual coding and the used templates were free to the researcher, a manual approach was chosen. The process of manual entering data assisted the researcher in retaining and organizing data.

Using a manual approach to data analysis following Tesch's (1990) eight steps of data analysis, themes were identified and discussed in the following chapters. Each interview audio, transcripts, and notes were reviewed multiple times to get a sense of the whole. Then, each participant's transcriptions and notes were explored for the meaning individually. All topics from participants were listed and clustered; next, the topics were abbreviated and listed as codes. Upon review of the codes, categories were identified: Each code was color coordinated to the appropriate category, and code abbreviations were listed next to the codes.

Trustworthiness

I reflected on areas of bias by writing down identified bias. As a health care worker, I feel rushed using electronic charting, I feel I have less time with patients, and I trust the equipment used in patient care. These areas are what I feel, but I need to avoid projecting my thoughts to study participants to identify their perceptions of health technology. To provide for credibility, trustworthiness, and decrease bias, participants were provided with information on what the study is for, what will happen with information provided after the study is over, and each participant was provided with and required to sign a consent prior to the interview. Being open with information and describing the process-built rapport with the participants to build trust. Information collected during interviews such as recordings and notes was saved on a password protected computer that only the researcher has access to. Data can be submitted to Walden University for information related to the dissertation process. The information collected will be deleted by the researcher after five years from the completion of the dissertation project. Any printed data will be shredded by the researcher. Information on how to contact Walden University's IRB for concerns was provided to each participant along with the consent form for participation. Participants have the right to withdraw from the interview at any time during the interview process.

One issue considered was the participant's sharing of personal medical information. Although the study reflected on the patient's experience with quality care and the use of health technology, people may overshare. An interview guide was used to guide the interview process, and the participants all completed a consent form to protect against shared information. Participants were given time to review information and ask questions prior to consent (Walden, n.d.). Consent was required from each participant prior to individual interviews. Qualifications were set for participants such as, participants must be over the age of 18, and participants must have been hospitalized within the last year.

Working in a community hospital, attending college, and working for a community college a consideration was a statement that the interviews do not necessarily reflect the view or care of the facility for interviews. Participants maybe patients, students, or acquittances that the researcher has had in clinical or in my job at the hospital. If participants knew the researcher in a way of influence, such as a boss or teacher, the interview was stopped, and next participant was contacted. One of the red flags listed by the IRB site is patients of the researcher. To meet a more diverse and geographical location, phone interviews were used. With using phone interviews COVID-19 restrictions were followed.

Walden University requires Institutional Review Board (IRB) approval to ensure proper consent for the study, ethical rights are protected, and that the participants welfare is not at risk (Walden University, n.d.-j). Prior to recruiting participants, IRB approval is required. Following IRB requirements, consent forms are completed before completing the interview process with each participant.

To provide for the trustworthiness of a qualitative study, Shenton (2004) recommends four strategies. The four strategies recommended to enhance the trustworthiness of the qualitative study are credibility, transferability, dependability, and confirmability.

Credibility

Triangulation is a method use to enhance the credibility process in research. Triangulation is checking the consistency of different data sources within the same method. Nobel and Heale (2019) share that methodological triangulation, promotes the use of data collection methods such as interviews and observations. Observations, interviews, literature reviews, and the use of the IOM framework helped guide the credibility of this study. Different sources were reviewed for this study with consistency related to qualitative method, a descriptive approach, and with the use of Tesch’s (1990) method of data analysis. Shento (2004) suggest that credibility can be enhanced with the use of qualitative methods that are already established. The annotated bibliography and literature review show the use of qualitative methods and Tesch's (1990) method of data analysis in the use of several studies similar to the phenomena of this study. Triangulation was further used with the gathering of demographic data during the consent and interview process.

Transferability

In order to show transferability to readers and participants, the role of the researcher is to provide a clear description of the research process and to allow readers to assess transferability to their own setting on their own (Korstjens & Moser, 2018). From experience in the field of nursing as a medical-surgical nurse, this study is transferable to the nursing field. Feeley et al. (2013) and Mwachofi et al. (2016) shows the transferability of similar studies to different areas with the studies being complete in a cancer center and doctor's office. The literature review shows a gap in knowledge where this study would be transferable to the patient population related to quality care and health care informatics. In the literature review, similar studies have related to other health care fields outside of nursing, from the health care provider point of view, and from the point of view of other fields. Feeley et al. (2013) and Mqachofi et al. (2016) states a need for patient perspective. This study added to the patient perspective of research.

Dependability

Dependability of a qualitative study is shown in the through description of the process (Shento, 2014). This study gives a description of the background, research problem, purpose, questions, design, roles, limitation, participant selection, instrumentation, data collection, and the data analysis process. Sections of the work have been reviewed by faculty that are experts in the field.

Interview questions were reviewed through the use of pilot testing. Pilot testing was used to practice the implementation process and for interview questions. According to Patton (2015), pilot tests are important in the research process to determine how participants are interpreting questions, to determine if the order of questions influences the interview process, to gather feedback from participants on questions, and to estimate the time the interview process will take.

Confirmability

Shento (2014) describes that confirmability comes from data that has an audit trail and is data oriented. This study follows a program checklist, and a descriptive, qualitative approach. The approach is supported with articles listed in the annotated bibliography and literature review. Electronic data from this study are saved on a password protected file and computer for participant selection. All data collection materials can be traced to a password protected file. With using Teschs' (1990) method of data analysis on a Microsoft Excel document, the data analysis process can be traced.

Ethical Protections

This section is to detail ethical protections that were put into place for this study. A purposed Walden University IRB consent form was used to obtain consent from participants. The purposed IRB form detailed how participants obtained the consent form, the interview procedure, volunteer nature of the interview, risk and benefits, privacy, and who to contact at Walden University with questions.

The participants were emailed a SurveyMonkey Link to provide consent. If participants agreed with the consent form, they acknowledged consent through the SurveyMonkey link. SurveyMonkey is a free online survey tool to collect data. Consent data was entered into SurveyMonkey by the surveyor and a link was submitted to participants for consent. Upon completion of the consent form, a time and date was set-up for interviews.

The consent form described how participants would be participating in a recorded interview by phone that lasted approximately twenty minutes. The interview was voluntary in nature and participants were able to decline participation at any time in the process. There are no risk or benefits to participants of the study. For patient privacy, documents and recordings will be kept in an encrypted, password secure laptop for five years before being securely disposed of. Transcripts of the interview were shared with faculty dissertation members with participant identifiers removed. For security purposes, participants were labeled as participant 1, participant 2, and continued until data saturation was met. For participants to privately discuss their rights a Walden University representative is listed along with contact information.

Participant interviews and data collection did not occur until after receiving approval for the doctoral study by the Walden University IRB committee. The IRB committee oversees that research complies with ethical standards set by Walden University and U.S federal regulations. Once the University Review (URR) phase has started, the researcher completed Form A and Form C. Both forms were submitted to the IRB committee for approval. Form A and Care an ethics review completed by the IRB committee. All studies require ethical approval which includes compliance with protection of human participants, ethical partnerships, alignment with Walden Universities mission for social change, and appropriate usage of scholarly tools (Walden University, n.d.-j).

Summary

To summarize this section, the research method and design were described in detail. The research method, participate selection, methodology, and roles were detailed. A through description of the research and design adds to the trustworthiness of the study. The next section will detail study results.

Chapter 4: Results

The purpose of this study was to explore the perceptions of patients related to the impact of health technology on the quality of the care they received during a hospitalization within the last year. Chapter 4 includes a description of the pilot test, setting, demographics, data collection, data analysis, evidence of trustworthiness, and results. The chapter concludes with a summary of the qualitative research on the perceptions of patients related to the impact of health technology on the quality of care received while hospitalized.

Research Question

How does health information technology contribute to the quality of care received from the patient perspective?

Pilot Testing

Pilot testing was used prior to the formal interviews to practice the interview process. No data from the pilot test were used in the final study. The Pew Research Center (2021), Creswell and Creswell (2018), and Patton (2015) recommended the use of pilot testing to evaluate the usefulness of interview questions. Three family members participated in the pilot testing of the interview questions. During the process, I found interview questions that were confusing or misleading for the participants. I also found that the participants did not like the stating of health information technology with each question but preferred the stating of HITECH. The interview guide was updated, and participants were reinterviewed. The changes were accepted, and the interview guide was updated based on the participant responses. The process was shared with the committee chair.

Setting

After approval from the Walden University IRB, a flyer was shared at a local critical access hospital in the outpatient setting and wellness center. The outpatient setting consists of family medicine, follow-up inpatient physicians, support group meetings, and an outpatient care center. Flyers were distributed to friends, families, and coworkers to distribute to participants they may know. Saturation was met; therefore, the use of the Walden participant pool was not needed.

Participants submitted interest to participate in the study through my Walden University email. The participants were then emailed a consent form and a SurveyMonkey link to consent to the study. Once a SurveyMonkey consent form was received, I contacted the participants to schedule an interview. Dates and times of the interviews were based on the preferences of the participants. All participants were interviewed on the telephone, and interviews were recorded using Microsoft Voice Recorder. Three participants had uninterrupted interviews, and two participants had interviews interrupted by their young children. When I asked participants if they wanted to reschedule due to the interruptions, the participants requested to continue with the interview. I conducted each interview in my private office with my personal telephone and private computer. The background was free from interruptions. Each voice recording was saved on my password-protected computer.

Demographics of Study Participants

After electronically signing the consent, participants had the option to complete a demographics survey or to skip demographics questions. All five participants completed the demographics survey. Part of the demographics questions addressed the inclusion and exclusion criteria of the study. Participants needed to be over the age of 18, hospitalized within the last year, and not health care workers. All participants met the inclusion criteria. Demographic information gathered included the participants' gender, race, geographic region, and education. Table 1 provides the demographic information obtained.

Table 1

Participant Demographic Information

Demographic	Number of participant responses
Over the age of 18	5
Hospitalization within the last year	5
Health care worker	0
Gender	3 female 2 male
Race	4 White 1 White/Hispanic
Geographical region	5 from Ohio
Highest level of education completed	1 GED 1 high school diploma 2 some college 1 master's degree
Response rate	5 participants = 100%

Data Collection

Data collection was consistent with the methods described in Chapter 3. Data saturation was met at five participants. The interviews took place by telephone at the participants' chosen date and time. During each interview, Microsoft Voice Recorder was used to record the interview. A Microsoft Word document was used to take notes during each interview. The interview recording and notes were saved on my personal password-protected computer in an encrypted file. The interview recording was submitted to Rev.com for a transcription of the interview. Each transcription was reviewed by me and compared to the recording; any errors in transcription were noted. The transcription files were saved to my password-protected computer.

Completion of the consent form and demographics survey took 1–2 minutes. The telephone interviews included about 5 minutes for introductions, about 12 minutes for the interview portion, and about 5 minutes for debriefing. After the interviews were completed, a 10-dollar gift card was emailed to each participant from the Gift Card Shop online.

Data Analysis Process

Tesch's (1990) eight steps of coding were used for data analysis starting with getting to know the whole and ending with assembling preliminary data. These steps were tracked on a Microsoft Excel document and summarized in a Microsoft Word document to identify the themes. Step 1 of Tesch's coding process is getting a sense of the whole. This was done by listening to each interview, reviewing transcriptions individually, and reviewing data as a group on the Excel document. I listened to the individual interviews and compared them to the interview transcripts for accuracy. On the Microsoft Excel form, each interview question was listed next to the individual participant interview responses. Step 2 involved selecting one document at a time to explore. This was done by listening to each interview, transcribing and reviewing each interview, and listing data on the Excel document.

Step 3 was to list all topics and clusters. Each of the interview questions related to the HITECH definition and one of the six IOM domains of quality care. The color-coded area was transformed in Step 4 as an abbreviation of the codes. Step 5 involved finding the most descriptive wording and turning codes into categories. Each of the individual interview responses was reviewed for the topic, the topic was color coded, and the topic was listed in the category's column. As each category was being reviewed, Step 6 was completed by making a final decision on abbreviations. The last step was to assemble data in one place for performing a preliminary analysis. This was done by converting the data to a Microsoft Word document to list the participants' responses, categories, and themes with color coding. The form was then reviewed by me and the dissertation committee.

Data Analysis Themes

Data saturation was met at five participants. The IOM quality care framework was used to map the interview questions. Each of the interview questions was then categorized into one of the IOM quality care domains. Then a theme was identified for each IOM quality care domain. Pseudonym's will be used for the participants. Participant 1 will be known as P1, participant 2 is P2, and continued through to participant 5 who will be quoted as P5.

HITECH Definition and Example

Interview Question 1 was the following: How would you describe health care information technology OR when we use the term health care information technology what comes to mind? Participants, when defining HITECH, gave definitions that related to any form of technology in health care. Answers included machines, equipment, blood pressure machines, and patient portals. Participants, when hesitant to answer or unsure, were asked to imagine their hospital room and how they would define health information technology from their hospital stay. Participants stated “I don’t know,” (P1) “unsure,” (P2) “I would say the equipment used to take care of me,” (P3) and “the machines used to take care of me.” (P4)

Interview Question 2 was the following: Was health care information technology used to provide care during your hospital stay? The theme identified in this question was that patients described HTITECH as care that provided patients with accessible care. Participants shared that HITECH was used in their hospital stay. What stood out was the patient access to labs, doctors’ appointments, physician communications, and results using HITECH. Participants shared that they received images of a colonoscopy, and HITECH was used to list admission answers of participants. A participant discussed seeing results and then being able to have questions ready for the doctor before seeing them, and another participant explained how they used the portal app to access communications to their physician with follow-up care.

IOM Quality Care Domain of Safe Care

Interview Question 3 was the following: When you think about safety, can you describe how health care information technology may have impacted the safety of your care? The safety theme identified was that HITECH provided safe measures for care. Participants described a variety of health care technology options that were used to provide safe care. Participants described the use of patient bracelets, care monitors, safety measures such as bed alarms and side rails, and computerized tracking. Participants described the use of computers by staff to track and monitor care as a safety measure. Quality care with safety was then related to the staff monitoring care of the patient, tracking vital signs, and through the care the hospital staff provided.

IOM Quality Care Domain of Effective Care

Interview Question 4 was the following: Can you describe how health care information technology may have impacted the effectiveness of your care? The theme identified to the IOM domain of effective care was that HITECH affects the care of patients. Participants described HITECH being used in discharge care, monitoring care, and the effectiveness of staff. Participant onedescribed how the computer crashed, resulting in the nurse having to get another computer. Vital signs were monitored on the computers, and staff provided effective communication through maintaining personal communications when using computers. Participant 3 described that the staff was able to talk to them, ask questions, and monitor care at the same time. The participants wanted to see that the effectiveness of their discharge goal was met, and this was met through using computerized discharge instructions.

IOM Quality Care Domain of Patient- Centered Care

Interview Question 5 was the following: When thinking about your care and how your own individual needs were met, how did health care information technology help to make the care you received more responsive to your own personal needs and values? The theme that emerged from this question was that participants related patient-centered care with HITECH to discharge care. HITECH was used to provide a patient-centered discharge. Participants described how HITECH was used to provide personalized discharge plans. Participants described discharge that was specific to their needs, such as vaginal birth plan and discharge instructions. Material could be printed or viewed on the patient portal app. Some patients noted when care was less personalized if the electronic discharge forms were generic, information was crossed off the printed material, or discharged was delayed. Participant two described how the discharge instructions could be printed in English or Spanish depending on the patient’s preference. The patient felt this was specific to them because they spoke both languages.

IOM Quality Care Domain of Timely Care

Interview Question 6 was the following: A goal for health care is to reduce delays. Can you describe how Health care Information Technology impacted the timeliness of your care? Relating HITECH to timely care showed that HITECH allowed participants to have faster access to care. The IOM domain of timely care showed that from the patient perspective the use of HITECH such as patient portals made care timelier. Participants described how the portal app allowed participants to receive labs quicker and provided a timelier communication with physicians. Reflecting on timely care participants described COVID, short staff, missed baths, and shared equipment as effecting the timelessness of care.

IOM Quality Care Domain of Efficient Care

Interview Question 7 was the following: In addition to the timeliness of care, we are also interested in the efficiency of care. How did Health care Information Technology impact the efficiency of your care? The theme that emerged when reflecting on efficient care was that care was efficient with the use of HTIECH and staff care when used together. Participants described that care was efficient when mixing HITECH with staff care. With the use of HITECH, care was efficient when staff "did not ignore them for computer and made eye contact" (P2). One participant described how when they asked a question the staff member would stop charting to answer the question. Equipment played a part in the perceptions of patients. One participant described that care was efficient because the nurse could take an automated blood pressure, work on something else, and then return to check their blood pressure. The participant felt with the multitasking ability the care was quicker and more efficient.

IOM Quality Care Domain of Equitable Care

Interview Question 8 was the following: When we describe health care equity, we are considering race, gender, and other social factors of care, including economic. How did Health care Information Technology impact the equity of your care? The theme that emerged here was that HITECH used improved the equitability of care. Care was more equitable with the use of HITECH due to the free access of WIFI and patient portals. Additionally, patient preferences could be saved and managed in the computer systems.

The participants shared how they could get information in Spanish or English, that religious preferences were saved on the chartings, and other specific preferences such as name could be saved to online charting.

Debriefing and Closing of the Interviews

In the debriefing portion of the interview, participants shared that patient focused care was the main quality care perspective of the participants. The participant's stated care was improved when staff checked on them, had knowledge of the unit, and treated them well. The participants felt that the staff care meant more to them in quality when combined with HITECH care. The participants were willing to overlook short, staffed units, delayed care, and failed equipment for care that was high quality from the hospital staff. One participant stated that when the technology did not work, the nurse was friendly contributing to quality care. Reflecting more on HITECH, participant 5 suggested if the portal app links were texted to their phone at discharge, the participant would be more likely to use.

For discrepant data variations, the individual's answers as a whole were reviewed using Tesch's eight steps for data analysis. The color coding and theming process allowed for the researcher to identify common themes. Variations in data were still analyzed and reviewed. For example, one participant was focused on COVID causing changes in quality care.

To summarize, a theme was identified for the participants understanding of what HITECH is, each of the IOM six domains of quality care, and a reflection of the debriefing comments. The conceptual framework of the IOM quality care framework was used throughout the study process. The IOM domains of quality care were used to map the interview questions. Then each category of the IOM domains of quality care was analyzed to identify themes related to each category.

Evidence of Trustworthiness

The description of trustworthiness given in chapter three was followed throughout the process. To review credibility, transferability, dependability, and confirmability were followed to show evidence of trustworthiness in the study.

Credibility

Triangulation was used to enhance the credibility of the research. Triangulation is checking the consistency of different data sources within the same method. Nobel and Heale (2019) share that methodological triangulation, promotes the use of data collection methods such as interviews and observations. Observations, interviews, literature reviews, and the use of the IOM framework helped guide the credibility of this study. Different sources were reviewed for this study with consistency related to qualitative method, a descriptive approach, and with the use of Tesch’s (1990) method of data analysis. The annotated bibliography and literature review show the use of qualitative methods and Tesch’s (1990) method of data analysis in the use of several studies similar to the phenomena of this study.

Transferability

In order to show transferability to readers and participants, the role of the researcher is to provide a clear description of the research process and to allow readers to assess transferability to their own setting on their own (Korstjens & Moser, 2018). From experience in the field of nursing as a medical-surgical nurse, this study is transferable to the nursing field. Feeley et al. (2013) and Mwachofi et al. (2016) shows the transferability of similar studies to different areas with the studies being complete in a cancer center and doctor's office. The literature review shows a gap in knowledge where this study would be transferable to the patient population related to quality care and health care informatics. In the literature review, similar studies have related to other health care fields outside of nursing, from the health care provider point of view, and from the point of view of other fields. Feeley et al. (2013) and Mqachofi et al. (2016) states a need for patient perspective. This study added to the patient perspective of research and could be replicated in other regions. Additionally, the study could be expanded to add the outpatient setting or the perspective of family members. Two possible participants had reached out to volunteer for the study if they could complete from the family member perspective, they were not used for this study, but this this study could be replicated to include the family perspective of health information technology.

Dependability

Dependability of a qualitative study is shown in the through description of the process (Shento, 2014). This study gives a description of the background, research problem, purpose, questions, design, roles, limitation, participant selection, instrumentation, data collection, and the data analysis process. Sections of the work have been reviewed by faculty that are experts in the field.

Interview questions were reviewed through the use of pilot testing. Pilot testing was used to practice the implementation process and for interview questions. According to Patton (2015), pilot tests are important in the research process to determine how participants are interpreting questions, to determine if the order of questions influences the interview process, to gather feedback from participants on questions, and to estimate the time the interview process will take. In the pilot testing process, three family members volunteered to participate. No pilot testing information was used within the study. The pilot testing was used just for the researcher to practice the process. During the process, the researcher found interview questions that were confusing or misleading for the participants. The researcher also found that the participants did not like the use of stating health information technology, with each question but preferred the use of stating HITECH. The interview guide was updated, and participants reinterviewed. The changes were accepted, and the interview guide was updated based on the participant responses. A data analysis was complete, and the process shared with the committee chair.

Confirmability

Shento (2014) describes that confirmability comes from data that has an audit trail and is data oriented. This study followed a program checklist, and a descriptive, qualitative approach. The approach is supported with articles listed in the annotated bibliography and literature review. Electronic data from this study are saved on a password protected file and computer for participant selection. All data collection materials can be traced to a password protected file. With using Teschs' (1990) method of data analysis on a Microsoft Excel document, the data analysis process can be traced. The dissertation committee reviewed data and discussed with the researcher.

Data Analysis Results

Research Question

How does health information technology contribute to the quality of care received from the patient perspective? Health information technology contributes to the quality of care received from the patient perspective through:

- providing safe measures of care
- impacting the effectiveness of care
- providing patient centered discharge
- providing patients with faster access to care
- using HITECH with staff care to improve efficiency and
- improving the equitability of care.

The following sections include samples of the research data and themes related to the research question. Each theme is then summarized in the following paragraphs.

Interview Question 1

In general, the participants didn’t relate to terms such as “health information technology” or “HITECH”. When pressed, they easily identified machines used to take care of them, equipment used, and communication devices such as patient portals. They did not consider technologies outside of their own patient rooms or technology used by physicians. Technology is not the focus of their health care or health care issues, and not controversial.

- “My health portal that they would let me go and look at to get my lab results.” (P1)

- “I would assume machine.” (P2)
- “I would me the automated pressure gauge, blood pressure stuff, and computers.” (P3)
- “Blood pressure and automatic monitor.” (P4)
- “Equipment used to care for me.” (P5)

The theme was participants related HITECH to care that was accessible to the patient.

Interview Question 2

Participants wanted technology to be accessible (helpful) to them. Examples included portal apps to check lab results, make appointments, and to communicate with them. Participants didn’t imagine uses beyond what they could see. There was no mention of technology used on televised medical shows, etc.

- “Access to viewing my COVID results, health portal, and access to communicate with doctor online.” (P1)
- “App that allowed me to follow up with doctor’s appointments, labs, and to message the doctor.” (P2)
- “Computer access to chart my questions.” (P3)
- “Access to call buttons for nurse assistance.” (P4)
- “Access to see radiology results.” (P5)

The theme was participants related HITECH to care that was accessible to the patient.

Interview Question 3

Participants described ways HITECH improved safety without using the term safety. The participants appreciated armbands being scanned to ensure the ID of the patient, call lights, automated vital signs, and bed alarms.

- “Safety through the monitoring of vital signs, ID bands, and door alarms. Bracelets were checked with medications.” (P1)
- “The use of computers made it safer for the nurse to track items while in room with me.” (P2)
- “A call light and bed alarm were used to keep me safe.” (P3)
- “My bracelet was scanned to tell the nurse I was the right patient, and the call button allowed me to call for help.” (P5)

The theme was providing safe measures of care.

Interview Question 4

Participants described that care was effective because HITECH compensated for staff shortages. Participants preferred for others to provide tech without them having to learn how to set it up and wanted convenient technology already in their lives. Such as for the hospital staff to text them a link to set up their patient portal.

- “The computer system went down, the nurse had a difficult time to figure out my last medication.” (P1)
- “Technology was used to monitor patients and for receiving medication.” (P2)
- “Staff used technology to provide care.” (P3)
- “Technology helped in getting me home quicker.” (P4)

- “Technology was used to provide care and get me home.” (P5)

The theme was impacting the effectiveness of care

Interview Question 5

Participants felt that HITECH was patient centered when personalized to them, such as with discharge instructions. Others related personalization to the specific machines used to care for them to get them home.

- “Electronic discharge was specific to why I was there.” (P1)
- “Printed discharge instructions that were specific to me. IPad was used to sign.” (P2)
- “Generic discharge instructions given from the hospital computer.” (P3)
- “Focused care on blood pressure with automatic blood pressure to get me home.” (P4)
- “Technology was used to respond to why I was there to get me home.” (P5)

The theme was providing patient-centered discharge.

Interview Question 6

Participants did not imagine new ways technology could help with issues of concern to them, but that it was able to get them home (discharged) quicker and communicate with their clinic quicker.

- “Portal app allowed me to make follow up appointments faster and send messages to the physician quicker.” (P1)

- "Received medications quicker with computer tracking, messaged the office on the app and received a quicker response, had labs from online results to review when doctor made hospital visit." (P2)
- "Care was faster when using technology even with short staff." (P3)
- "The nurse saw my vitals signs listed right on computer and did not have to leave the room." (P5)

The theme was providing patients with faster access to care.

Interview Question 7

Participants shared that as long as care continued to focus on the importance of staff to help them that care was efficient. Participants more readily described contributions made by staff.

- "Staff cared and continued to check on my when using HITECH." (P1)
- "Staff acknowledged me and made eye contact when charting on the computer." (P2)
- "Used computer to answer my questions." (P3)
- "Nurse could multitask with using automated monitor, checking results, and charting while working on me." (P3)
- "The care used with technology was used to get me home." (P4)
- "Discharge was efficient and I felt better from care." (P5)

The theme was using HITECH with staff care to improve efficiency.

Interview Question 8

Participants felt that as long as the portal app and wifi were free that care was equitable. One participant stated that with the use of HITECH they could have instructions printed in their preferred language, they had troubles receiving this before the use of HITECH.

- “Portal app and Wi-Fi was free.” (P1)
- “As a white- Hispanic I could get instructions in Spanish or English, online or printed.” (P2)
- “Religious preferences were listed online. I did not have to share each time.” (P3)
- “It was a Catholic hospital, but care was to no specific religion. Preferences were listed online and easy to access.” (P4)
- “Care was equal to that pre and post COVID. It was improved with technology fast discharge.” (P5)

The theme was improving the equitability of care.

Providing Safe Measures of Care

From the patient perspective health technology contributed to the quality of care through providing safe measures of care. From the patient perception, they described their hospital stay as safe through the use of equipment, computers to monitor care, and quality care related to care from nursing staff. Participants described equipment being used as part of keeping them safe while in the hospital. One participant describes “the vitals machine used and to monitor me and baby”. Participants described id bands, call buttons, ID bracelets, side rails, and bed alarms as HITECH safety care. One participant described the use of computers by staff to track and monitor care as a safety measure. Along with the use of health technology quality care with safety was then related to the staff monitoring care through physical care and through the use of HITECH. For example, staffs tracked vital signs through monitors and online charting.

Impacting the Effectiveness of Care

From the patient perspective health technology contributed to the quality of care through impacting the effectiveness of care. The IOM domain of effective care from the patient perspective was shown to come from the use of computers, equipment, care from staff, and discharge care. The main perspectives of participants on effective care were from the use of equipment, quality care provided by staff, and discharge care. Related to HITECH one patient had the computer crash and yet felt like the care received was effective because the staff easily found another computer to provide care. One participant was indifferent to effective care relating effectiveness to care provided by staff but then went on to describe how HITECH was used for discharge orders and directions. Other participants also related care back to the staff as effective due to staff treatment of the patient, monitoring of care through HITECH, and physical care. Participants stated effective care because the goal at discharge was met, discharge was quick, and they felt better at discharge. Discharge care was improved from the patient perspective with the use of health technology to provide a patient centered and timely discharge. One participant described that the care was still effective with unknown cause of issue because they felt better at discharge, and the colonoscopy helped with discharge.

Equipment such as vitals machines, colonoscopy, and the use of an IV were described by patients as HITECH used for effective care.

Providing Patient- Centered Discharge

From the patient perspective health technology contributed to the quality of care through providing patient centered discharge. Participants focused on patient centered care during the discharge process HITECH provided patient centered care through online discharge plans, and discharge instructions printed from the hospitals online system. Participants described that the quality of their care was improved when discharge instructions were centered to them compared to generic forms. Items on one participant's printed discharge instructions were crossed out and unrelated. Quality care was related back to the patient portal MyChart for the viewing of discharge information. Other patient- centered care was reflective of patient focused care with vitals, length of hospital stay, delayed discharge and specialty care related to COVID, and care received while in the hospital. One patient described the use of a colonoscopy as health technology and centered to their care. The same patient stated care they received a protocol medication and was unsure why. Throughout the interviews patients related HITECH patient centered care to patient portals, discharge care with iPads, and equipment used to provide care such as vital sign machines and diagnostic equipment. These items improved the quality of care through providing patient centered care that can be viewed on portals, discharge was completed at bedside with iPad, and equipment was used to provide patient centered treatment that lead to a quick discharge.

Providing Patients With Faster Access to Care

From the patient perspective health technology contributed to the quality of care through providing faster access to care. The IOM domain of timely care showed that from the patient perspective the HITECH use of patient portals made care timelier. Participants described how the portal app allowed participants to receive labs quicker and provided a timelier communication with physicians. One participant did state that they did not receive the portal app because they were unsure on how to use it. One participant shared that HITECH did not make a difference to the timeliness of care. Reflecting on timely care participants described COVID, short staff, missed baths, and shared equipment as effecting the timelessness of care.

Using HITECH With Staff Care to Improve Efficiency

From the patient perspective health technology contributed to the quality of care through providing improved care when combining staff care with the use of HITECH. Relating care back to HITECH, participants described that quality care came from staff when they “did not ignore them for computer and made eye contact”. One participant described how when they asked a question the staff member would stop charting to answer the question. Equipment played a part in the perceptions of patients. One participant described that care as efficient because the nurse could take an automated blood pressure, work on something else, and then return to check their blood pressure. HITECH improved care with allowing the nurse to multitask. The nurse was able to track care on the computer while maintaining quality patient care through eye contact, communication, and charting.

Improving the Equitability of Care

From the patient perspective health technology contributed to the quality of care through providing improved equitable care. The IOM domain of equitable care showed that participants found that equitability of care was improved with the use of HITECH. Participants related quality care to equitable care. Equitable care was improved with the portable apps Equitable care was related to free access to HITECH. The patients stated the portal apps and WIFI were free to use. Quality equitable care was related to patient preferences being known to staff. Participants stated that the hospital did not affect religious preferences but did ask about personal references for charting purposes. The health care staff saved personal preferences such as name, religious preferences, and language to the electronic charting. The electronic charting showed equitable care with the ability to print in different languages. One participant described how they speak English and Spanish. The quality of equitable care was improved because the patient could have discharge instructions printed in either language from the electronic chart.

Summary

To summarize, the research question, does health information technology contribute to the quality of care received from the patient perspective, was answered. From the patient perspective, HITECH contributed to quality of care received by providing safe measures of care, impacting the effectiveness of care, providing patient centered discharge, providing faster access to care, improving efficiency when HITECH was used with staff care, and by improving the equitability of care. Chapter five will provide and interpretation of the findings, limitations of the study, recommendations, and implications of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

Discussion of Study

The purpose of this study was to explore the perceptions of patients related to the impact of health technology on the quality of the care they received during a hospitalization within the last year. The IOM framework of quality care was used to map interview questions to the IOM domains of quality care. The six domains of quality care are care that is safe, effective, patient centered, timely, efficient, and equitable. For this descriptive qualitative study, findings related to the research question: How does health information technology contribute to the quality of care received from the patient perspective? Interviews were completed, and data were analyzed following Tesch's (1990) eight steps of data analysis. Interview questions were categorized by the IOM domains of quality care, and themes were identified.

From the patient perspective, HITECH contributed to quality of care received by providing safe measures of care, impacting the effectiveness of care, providing patient-centered discharge, providing faster access to care, improving efficiency when HITECH was used with staff care, and improving the equitability of care. Additional findings during the introduction and debriefing of the study indicated that participants could not define HITECH and related examples to any technology in health care. Participant examples ranged from blood pressure cuffs to medical procedures to staffing. Participants shared in the debriefing stage that if quality care was good from staff, then the use of HITECH was made better.

Interpretation of Findings

Findings from this study extend knowledge in the discipline by supporting findings discussed in the literature review. Existing measures presented in the literature review can address the IOM quality care domains and improvements, for example, “by setting user – friendly meanings, participants are more likely to understand how to relate quality to their own care” (AHRQ, 2018, par. 4.) Participants in the current study showed a lack of understanding to the HITECH definition and examples. Through a pilot study, I found that the original interview questions were hard to understand. Once the questions were made more user friendly, the participants were more easily able to apply quality measures to their care.

HITECH Definition and Examples

From the patient perspective, HITECH is care that is accessible to the patient such as patient portals and pictures from procedures. From the patient perspective, all participants related health information technology to any form of equipment used to provide care for them. For example, participants stated “equipment used to care for me” and “I would assume machines.” Participants were hesitant to describe health information technology when presented in the terminology of health information technology. When the participants imagined their room and the care provided, examples were more easily given. Once health information technology was described as HITECH or as technology used to care for you, participants could more easily answer the questions. Once I asked the participants to define equipment used to care for them, definitions and examples were provided. Definitions of HITECH ranged from blood pressure equipment to machines to equipment used to care for them.

From the patient perspective, participants related HITECH examples to any equipment used to care for them. Participant one stated “any equipment used to care for me, blood pressure monitors, and machines.” What the participants wanted to see from HITECH when providing quality care is that it is easily accessible to them. All participants described HITECH as being or needing to be accessible to patients. Three of the participants described having access to HITECH portal apps to communicate with physician, having access to labs and results, and the ability to make appointments online. The remaining two participants stated that they would have been more involved with the use of HITECH if it was more easily accessible. Participant four described that if the portal app link had been sent to their text message, they would have been more likely to use it compared to signing up on their own. Participant three stated they would have used the portal app if the hospital had automatically signed them up for it instead of giving them papers for each appointment to complete on their own. Participants shared that the HITECH improved the quality of care received because it was more accessible. Participants described the process being timelier, including making appointments, contacting doctors, and viewing labs. One participant described having access to their colonoscopy images, which they could share with others, and being more likely to look up care related to colonoscopy because of being able to access the image.

Providing Safe Measures of Care

The IOM framework of quality reports were focused on the improvement of patient safety and quality care in the United States. Results from the current study showed quality care improved the IOM domains with the use of HITECH from the patient's perspective. Results from this study showed that HITECH measures such as ID bands, bed alarms, portal apps, and patient monitors were used to provide safe measures of care.

All participants described how HITECH provided safe measures of care. Participants could not easily state how HITECH provided safety, but once the participants started to answer questions, they were able to describe safe measures used. Safety measures included call lights, ID bracelets, monitoring of care, and the use of automated vital signs. Participants felt that HITECH kept them safe through ID bands to scan medications, alert bands to keep them on the unit, and vital signs to track their condition. One participant described that although staff were short due to COVID, HITECH allowed for safe care through the use of call buttons for assistance and alarms on their chair. All participants were able to describe how HITECH provided safe measures of care.

From the patient perspective, examples of safety with the use of HITECH were described as the use of equipment, computers to monitor care, and quality care related to care from nursing staff. Participants described equipment being used as part of keeping them safe while in the hospital. One participant described "the vitals machine used and to monitor me and baby." Participants described ID bands, call buttons, ID bracelets, side rails, and bed alarms as HITECH safety care. One participant described the use of computers by staff to track and monitor care as a safety measure. Quality care with safety was then related to the staff monitoring care with HITECH equipment, tracking vital signs with automated machines, and through the care the hospital staff provided.

Impacting Effectiveness of Care

Gensheimer et al. (2018) and Wright (2015) reported better patient outcomes with an improved understanding of health technology. I found that care was impacted by the use of HITECH. Care was improved through the use of portal apps that improved the patients' access to care, and care was impacted when the computers crashed. Demeke et al. (2020), Hart et al. (2020), Rosenbluth et al. (2020), and M. Wong et al. (2021) reported increased health technology use in the form of telehealth with the coronavirus pandemic. I found that care remained effective during the coronavirus pandemic as long as care provided with the HITECH was effective to the staff care, such as a timely discharge. Timely discharge was improved with the use of HITECH to provide patient-centered discharge and the ability to monitor care with patient portal applications. One participant stated that even with short staff, care was effective when a health care worker was able to take a blood pressure on the automatic monitor, chart on the computer, and have another task going while caring for the patient.

Participants felt that the effectiveness of care was impacted by the use of technology. Although technology impacted the care received, the participants were indifferent to the use of HITECH if they could get a quick discharge. The participants wanted to get discharged quickly whether from using online discharge or paper. Care was considered effective if they could get home quickly and feel better.

The IOM domain of effective care from the patient perspective was shown to come from the use of computers, equipment, care from staff, and discharge care. The main perspectives of participants on effective care were from the use of equipment, quality care provided by staff, and discharge care. Related to HITECH, one patient had the computer crash and yet felt like the care received was effective because the staff easily found another computer to provide care. Other participants related care back to the staff as effective due to staff treatment, monitoring, and physical care. One patient stated effective care because the nurse staff was "nice, talked to me, and asked questions" all while charting. Participants stated effective care because the goal at discharge was met, discharge was quick, and they felt better at discharge. The quick discharge was related back to communication on the portal application and through patient-centered discharge information. Patient data were monitored and maintained through the use of EHRs. One participant described that the care was still effective with unknown cause of issue because they felt better at discharge, and the colonoscopy helped with a timely discharge. Equipment such as vitals machines, colonoscopy, and the use of an IV were described by patients as HITECH used for effective care.

Providing Patient-Centered Discharge

Neves et al. (2018) found that patients not included in their care with the use of HITECH had a decrease in quality care and gaps in knowledge related to their care. Themes from the current study support the need for patient-centered care. This study showed that patients identified HITECH as being patient centered with discharge planning. Participants used portal apps to be involved in follow-up care and discharge. The participants felt that quality care was improved and patient centered with using HITECH.

Participants were surprised at how patient-centered care was impacted with the use of HITECH. Participants described how they expected to feel excluded, but the staff made care patient centered by looking at them when talking and charting, when the staff would stop charting and answer questions, and with the use of personalized discharge instructions. Care was patient centered because of how the staff interacted with them when using the technology. Examples included looking at the patient, focusing attention on the patient, and giving them personalized discharge instructions. One participant shared that the printed online instruction had areas crossed out by the nurse, which made it patient centered through handwritten instructions specific to the patient.

The IOM domain of patient-centered care showed the participants' perspective of patient-centered care focused on discharge care. Participants focused on patient-centered care if discharge instructions were focused on the patient. One participant described that discharge instructions were specific to their care and improved their discharge experience while another stated care was generic to any patient in the hospital with that issue and made the discharge experience less patient centered. Items on one participant's printed discharge instructions were crossed out and unrelated to their discharge. With being online, the patient felt the staff could have changed the instructions and printed specific ones to them. Quality care was related back to the patient portal MyChart for the viewing of discharge information. Patients stated improved patient-centered care with the ability to follow up with their physician, send messages to their providers, make appointments, and view results from the application. Other patient-centered care was reflective of patient-focused care with vitals, length of hospital stay, delayed discharge and specialty care related to COVID, and care received while in the hospital. One patient described the use of colonoscopy as health technology and centered to their care. The same patient stated they received a protocol medication and were unsure why. Throughout the interviews, patients related HITECH patient-centered care to patient portals, discharge care with iPads, and equipment used to provide care such as vital sign machines and diagnostic equipment.

Providing Faster Access to Care

Mennemeyer et al. (2016), Kim & Lee (2020), Gold & McLaughlin (2016), Alder-Milstein & Jha (2017) all presented increases in health technology in the health care setting due to the implantation of the HITECH act and argued the need for improved patient understanding to promote quality care. This study supports the need by showing that participants had faster access to care such as labs, communications, appointments, and follow- up care when HITECH was used.

Participants were the clearest about timely care with the use of HITECH. All participants easily answered this question when asked that HITECH did improve the quality of care with faster access to care. Majority of the participants shared that care was faster due to the use of portal apps. Portal apps allowed for the patient to make quicker appointments and communicate with the physician faster. Participants shared that upon scheduling follow up care, it is hard to reach the physician’s office and can often take days when calling in person. But when using the portals apps, they had answers within 24 hours. Participants shared that they received the lab results, before hospital employees could even call back. This allowed them to come up with questions to ask when the office did call.

The IOM domain of timely care showed that from the patient perspective the HITECH use of patient portals made care timelier. Participants described how the portal app allowed participants to receive labs quicker and provided a timelier communication with physicians. One participant did state that they did not receive the portal app because they were unsure on how to use. Participants stated that they could make appointments from their patient portal to follow up with their physician. Others stated that they could view their labs before the physician came to their hospital room and have questions prepared. Reflecting on timely care participants describe COVID, short staff, missed baths, and shared equipment as effecting the timelessness of care.

Using HITECH With Staff Care to Improve Efficiency

The HITECH Act was put into place to encourage the meaningful use of health technology and to promote the safety and security of health information (Health Information Privacy, 2017). This study found that participants stated that care was improved when staff efficiently used the equipment to monitor their care while providing quality physical care from the health care staff.

Participants had trouble providing answers when asked about efficient care. Participants even stated that they were indifferent to the use of HITECH with efficiency.

Only one participant stated that care was efficient because the nurse could multitask taking care of the patient, charting, automatically monitoring, and checking results all at the same time. Even then, the participant stated efficient care because of the staff care. Participants felt that care was efficient because of the staff interaction when using technology. Participants felt the care was efficient because the staff would acknowledge the patient when charting, making eye contact, using the computer to answer questions, and charting the care received.

The IOM framework for efficiency from the patient perspective showed that study participants felt that care received from staff while using HITECH was the most common theme related to efficient care. Relating care back to HITECH, participants described that quality care came from staff when they “did not ignore them for computer and made eye contact”. One participant described how when they asked a question the staff member would stop charting to answer the question. Equipment played a part in the perceptions of patients. One participant described that care as efficient because the nurse could take an automated blood pressure, work on something else, and then return to check their blood pressure.

Improving the Equitability of Care

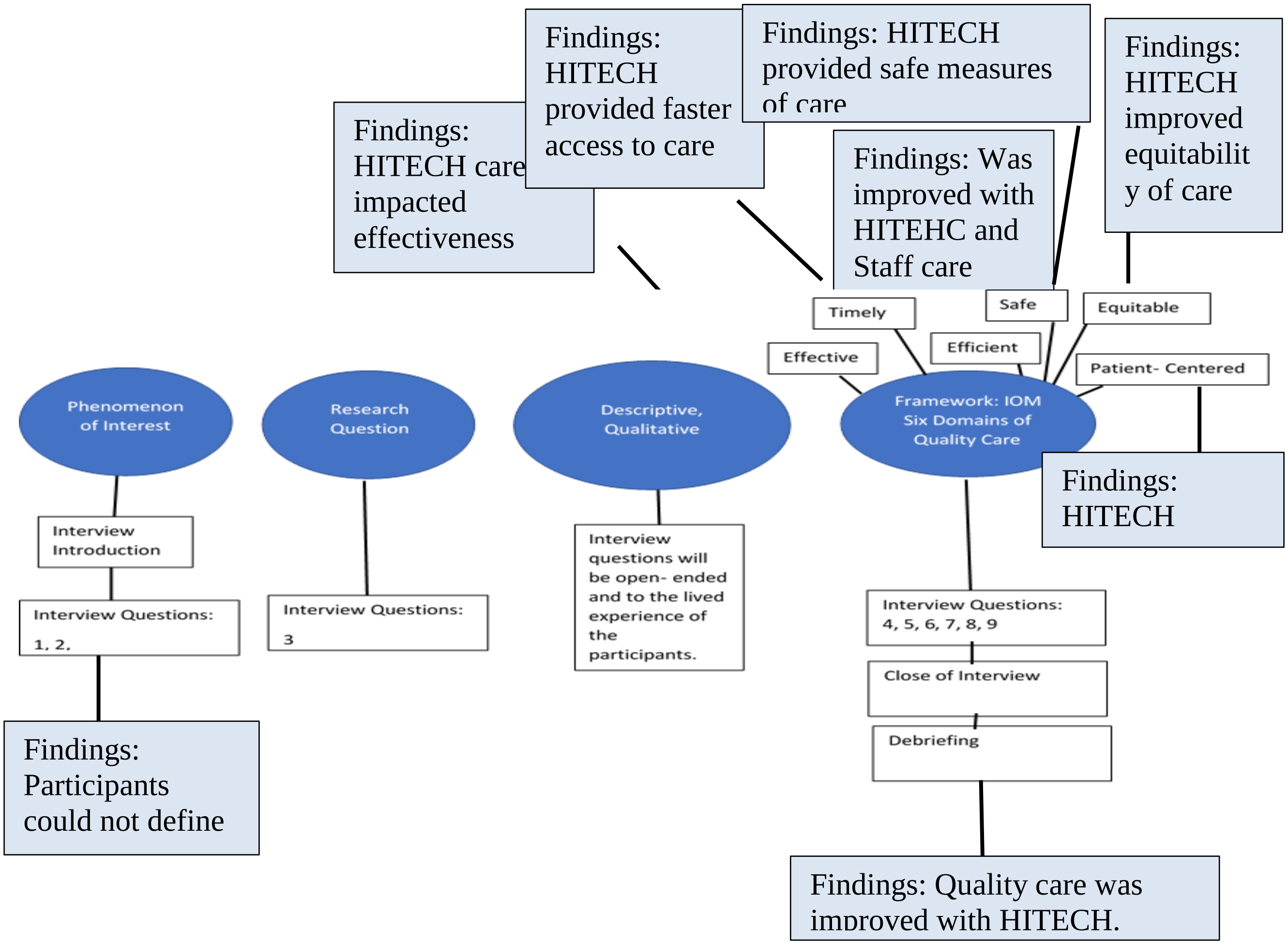
Roberts et al. (2017) found that patients were more likely to be involved in their care, research their conditions, and be compliant to care orders when the patient’s used the health care technology available to their condition. For the participants in Robert’s et al. (2017) study, they used technology related to tracking their diabetic condition, online support groups, and internet use for research; participant’s that used the health technology available showed improved understanding of their condition. For this study, participants shared improved equitability with free access to patient portal apps and wifi, the saving of personal preferences, and the ability to print material to their preference such as in Spanish or English.

From the patient perspective, HITECH did improve the equitability of care received. Participants felt that as long as the portal app and wifi was free that care was equitable. One participant stated that with the use of HITECH they could have instructions printed in their preferred language, they had troubles receiving this before the use of HITECH.

For the IOM domain of equitable care, participants related equitable care back to the use of portable apps and charting through the use of electronic health records (EHR). The patients stated the portal apps and WIFI were free to use. The hospital staff used EHR to chart and track patient data. Participants stated that the hospital did not affect religious preferences but did ask about personal references for charting and care purposes. The health care staff saved personal preferences such as name, religious preferences, and language to the electronic charting. Any staff that accessed the EHR would then know the patients' individual preferences. The electronic charting further showed equitable care with the ability to print in different languages. One participant in the study spoke two languages and described how this information was saved in the EHR. At discharge, care was specific based on the language the participant preferred and printed instructions were given from the EHR data base to that language. The finding of this study were mapped back to the interview guide. The IOM mapping can be seen in Figure 2.

Figure 2

IOM Mapping



Limitations of the Study

The main limitation of this study was related to the type of interviews completed. Due to continued COVID mandates during the recruitment phase, participants were interviewed by telephone. Two interviews were interrupted by young children of the participants. The participants wished to continue with the interview. A more semi- formal face to face interview could have yielded less interruptions.

Additionally, due to the rural location of the study, there were limitations on race and region. All participants were from Ohio. All participants listed their race as white with one stating white Hispanic. The lived experiences of participants and race could be different based on the geographical location.

Recommendations

Recommendations for further research include expanding recruitment efforts to include other races and regions throughout the United States. This study was focused on inpatient hospital visits. Further studies could extend into other health care settings.

Implications

Positive social change at the individual, hospital, institutional, and the community level could be seen from this study. Information from this study provided insight for the need to provide further education to patients on HITECH. Participants would benefit from understanding what HITECH is defined as and how to use patient portals apps. At the hospital level, staff can demonstrate continued quality care with the use of HITECH from sharing the patient perspectives. By maintaining eye contact and asking questions while on the computer participants felt that the quality of care was improved. Reflecting on the IOM domains of quality care staff and patient education to the domain can provide further improvements to care. The institution could see an improvement in patient outcomes and quality score levels based on changes that could be implemented based on this study.

Lastly, community support could be improved to include the use of HITECH. With continued changes in telehealth and technology at bedside, care can be improved for safety, effectiveness, patient centered, timeliness, efficiency, and equitability. The data from this study traced back to the IOM framework shows how each domain of quality care was improved from the use of HITECH.

Conclusion

This descriptive, qualitative study related back to the IOM framework of quality care to show that health information technology has an impact on quality care from the patient perspective. Results and recommendations from this study can be used to improve patient outcomes, improve quality care, and to promote education. Improving patient outcomes, care, and education relates back to the Walden University motivations for positive social change. Change will come first with the acceptance of this dissertation, then with me sharing with my network of peers, health care settings, and educational institutions.

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Appendix A: Interview Guide

Parts of the Interview	**Interview Questions** Prior to the interview, participants will complete a consent form and demographic questionnaire.
Introduction	Hello, thank you for participating in this research interview. The focus of my research is to understand how Health care Information Technology affected the care you received during your hospital stay. During the interview I will refer to Health Information Technology as HITECH. If you need clarification at any time, please ask. Do you have any questions before we begin?
Question 1	How would you describe Health care Information Technology OR When we use the term Health care Information Technology what comes to mind?
Question 2	Was Health care Information Technology used to provide care during your hospital stay?
	Quality care for all patients is a goal. There are several factors that influence quality care. I am going to ask you to tell me how Health care Information Technology may have affected the

	quality of care you received. One example might be the use of a health portal to retrieve patient information (use if they ask for an example). Quality care for all patients is a goal. There are several factors that influence quality care. Information technology has been developed to support quality care; one example might be the use of a health portal to retrieve patient information. Can you think of any ways that the use of information technology has helped /or didn't help your caregivers take better care of you? The next questions will focus on quality care indicators such as safety. One example might be the use of a health portal to retrieve patient information (use if they ask for an example).
Question 3	Safety – When you think about safety – can you describe how Health care Information Technology may have impacted the safety of your care?
Question 4	Effective – can you describe how Health care Information Technology may have impacted the effectiveness of your care?
Question 5	Patient Centered – When thinking about your care and how your own individual needs were met…How did Health care Information Technology help to make the care you received more responsive to your own personal needs and values?

Question 6	Timely – a goal for health care is to reduce delays. Can you describe how Health care Information Technology impacted the timeliness of your care?
Question 7	Efficiency – In addition to the timeliness of care, we are also interested in the efficiency of care. How did Health care Information Technology impact the efficiency of your care?
Question 8	Equitable – When we describe health care equity, we are considering race, gender, and other social factors of care, including economic. "Can you think of any ways that HIT may have made your access to care better or faster?"
Debriefing	As you have been thinking about health information technology and your care received while in the hospital, is there anything else you would like to add?
Interview closing	Thank you for participating in the interview today. May I contact you for any follow- up questions? Is there anything else you would like to add to the interview?

Appendix B: Research Recruitment Flyer

Seeking Research Study Participants

To participate:

- Be over the age of 18
- Have been hospitalized within the last year.
- Nonhealthcare workers

Benefits:

- Promote social change through the study of quality care and health technology from the patient perspective.
- Participants will receive a ***$10 gift care*** for their participation

Participation

- Interviews will take place through a telephone interview no longer than 20 minutes.

To Volunteer:

- Email stacie.campbell@waldenu.edu, topic line research study volunteer.

Researcher is conducting this study for their Walden University dissertation.

*The distribution location of this flyer is not involved in or participating in the research study.