1-1-2021

Perceptions of Physicians and Patients on How Mediated Electronic Health Records Affect Their Communication During Medical Encounters

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Walden University
2021

Abstract

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MS, Walden University, 2017

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Services, Community Health

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November 2021

Abstract

Little is known concerning the effects of the mediated electronic health record (MEHR) on physician–patient communication, thereby making it difficult to provide patient-centered care. The purpose of this qualitative study was to examine and understand the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. Data were collected from five physicians and five patients who provided email responses to open-ended questions. Driven by the media richness theory, a content analysis was performed to analyze the responses. Findings revealed that screen gazing, heavy keyboarding, and positioning of the computer monitor affect physician–patient communication during medical encounters. Recommendations include physicians' training to enable them to understand how they can improve their communication with patients when using MEHR. Additionally, the computer monitor should be positioned in a manner that allows physicians to maintain eye contact with patients and enables patients to see the contents of the screen. The findings may contribute to social change by improving communication between physicians and patients, thereby enhancing quality of care.

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Dedication

This dissertation is dedicated to my dear family members for their support and encouragement that helped me to accomplish my ambition. A special gratitude to my loving husband, Johnny Louis, whose words of encouragement kept me going. I also dedicate this work to my friends and colleagues who have supported me throughout this journey. I dedicate this dissertation and give special thanks to my chair, Dr. Egondu Onyejekwe, for supporting me and always being there for me throughout the program.

Acknowledgments

I would like to thank my dissertation committee members who have been very supportive and generous throughout the entire doctoral program. I would like to acknowledge and appreciate the management of the hospital for allowing me to conduct my study at their institution. Special thanks also go to the Institutional Review Board at Walden University for their support in getting approval to conduct my study. Finally, I would like to thank my chair, Dr. Egondu Onyejekwe, for her relentless support in writing this dissertation.

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Chapter 1: Introduction to the Study

Digital technology has enabled medical practitioners to distribute and exchange information easily, supporting communication between health practitioners and patients. Digitalization in the health sector has led to a change in service delivery in terms of the information shared across organizations and between patients and health practitioners (Pelland et al., 2017). For instance, the use of electronic health record (EHR) has enabled patients to access their health records electronically. In recent years, health records were accessed mostly by health practitioners, but with the widespread implementation of EHRs by a number of health care organizations, patients can easily access their health records (Meigs & Solomon, 2016). This technology has made it possible for patients to access their health information very easily.

Most health professionals have adopted EHRs to help them reduce medical errors and streamline health data, thereby placing the medical industry on the digital map with other industries embracing digitalization in the 21st century (Pelland et al., 2017). Despite the growth in the implementation of EHRs, some researchers have reported concerns about the effects this technology has on the patient–provider relationship. According to Kroth et al. (2018), when using the tool, physicians are required to multitask because they have to communicate with the patients while using the computer to access patient information and come up with the treatment plan. Pelland et al. (2017) held that the use of computers while interacting with the patient interferes with communication between the two because the physician will use a lot of time documenting, which requires effort to communicate with the patient, and less time is

available for the patient. Therefore, the use of computers in such scenarios can lead to ineffective communication because consultation might be done when the physician is keying in data (Pelland et al., 2017). On the other hand, Kroth et al. argued that the use of EHRs helps to improve access to patient's data, thereby enhancing communication between the patient and the physician. Kroth et al. added that easy access to the patient's lab results enables physicians to prepare adequately for interaction with the patient. Additionally, the use of EHRs is effective because it improves communication between the patient and the physician and the results can be used by the physician to look at the test result alongside the patient, thereby achieving successful engagement (Kroth et al., 2018). The purpose of the current qualitative study was to examine and understand the perceptions of physicians and patients regarding how mediated electronic health record (MEHR) affects their communication during medical encounters in the outpatient setting.

Background

The use of the EHR has increased dramatically although there is little knowledge regarding the effect of the EHR on physician–patient communication. Health care organizations are increasingly integrating the EHR into medical practice although it is unclear how the EHR affects the relationship between patients and physicians. Alkureishi et al. (2016) asserted that the use of the EHR has increased significantly, yet it is unclear how this technology affects the physician–patient relationship. Patients have raised complaints about physicians who focus more on the computer than them during medical encounters (Rathert et al., 2017). Although this technology is increasingly implemented by many health care providers because of the associated benefits, there are some

significant drawbacks that need to be considered. For example, some researchers have reported that the use of the EHR can affect how physicians focus on patients, thereby interfering with their communication and relationship with patients (Kroth et al., 2018; Pelland et al., 2017). Systematic reviews have indicated the effect of EHR use on communication between patients and physicians. Alkureishi et al. completed a literature review and noted that studies had limitations that hindered their applicability to current clinical practice. Based on an evaluation of the literature that Alkureishi et al. reviewed, I determined a need to conduct more studies to assess how the EHR affects the relationship between physicians and patients during the medical encounter. It was important to investigate how the use of the EHR affects the quality of communication and the relationship between physicians and patients to ensure that physicians are able to provide patient-centered care.

Health care organizations recognize the importance of health care technologies in achieving patient-centered care because they are able to coordinate and organize patient data. Patel et al. (2019) explained that health organizations have invested in health information technologies such as EHRs to ensure effective coordination and organization of patient health data. Patel et al. observed that the use of EHRs in the exam room was not investigated sufficiently to understand how they affected the communication between physicians and patients. Patel et al. conducted a systematic review of existing literature to understand how the use of EHRs among physicians affected their communication with patients. Technology can affect effective provision of health care services because of behaviors such as screen gazing and keyboarding, which impair the relationship between

patients and physicians by minimizing rapport, eye contact, and provision of emotional support. The use of the EHR negatively affects communication between patients and physicians (Alkureishi et al., 2016). Patel et al. carried out a systematic literature review, which revealed that EHRs used in exam rooms can affect communication between doctors and patients. It becomes challenging for physicians to achieve patient-centered communication when using these technologies because of keyboarding and screen gazing that draws their attention away from the patient.

Communication between physicians and patients is critical to achieve patient-centered care. Rathert et al. (2017) conducted a systematic review of the existing literature to understand how the EHR affects the delivery of patient-centered care. Rathert et al. argued that physician–patient communication is critical for providing patient-centered health care. Physicians have expressed concerns that the EHR affects their interaction with patients in negative ways (Reuben et al., 2016). According to the systematic review of literature conducted by Rathert et al., the EHR enhances how doctors capture and improve biomedical information. Nevertheless, Rathert et al. also reported that this technology is likely to hinder physicians from collecting emotional and psychosocial data that affects how supportive and healing relationships are developed.

Many physicians focus more on their computer monitors, which could affect their communication with patients. Alpert et al. (2017) explained that evaluating eye gaze can help to facilitate an understanding of how physicians pay attention to patients and how it affects their interactions. Additionally, Alpert et al. explained that eye gaze also indicates behaviors like searching for information and presenting the information. Alpert et al.

investigated eye gaze patterns between patients and physicians to understand how EHR use affects communication and the ability of physicians to remain attentive. Alpert et al. found that EHR changes the eye contact dynamic between physicians and patients. Their findings have been supported by Asan et al. (2016) who found that the use of the computer with the EHR provides additional opportunities for interaction during medical encounters because physicians have to engage their patients while they are using computer. Few studies have addressed how keyboard activity, eye gaze, and silence affect the communication between patients and providers and how those factors control the conversation during the visit (Asan et al., 2016). Therefore, the current study was needed to investigate the impact of the EHR on doctor–patient communication to provide patient-centered care.

Problem Statement

Physician communication with patients is an important element of patient-centered care that can improve patient safety and health care outcomes (Rathert et al., 2017). It is important for health care providers to address specific health care needs and desired outcomes to provide patient-centered care. Therefore, there is a need to involve patients when developing patient safety programs to provide patient-centered care and improve health care outcomes (Trier et al., 2015). Health care providers should understand the importance of considering patients' opinions when designing a plan that will affect them as far as the delivery of care is concerned. However, achieving patient-centered care can be challenging when the communication between physicians and patients is not effective (Levinson et al., 2010). For instance, physicians may not

understand what patients are communicating when they are distracted during medical encounters. Therefore, it becomes challenging to provide effective care services that meet the needs of every patient. The use of EHRs during medical encounters is considered as one of the factors that affect the communication between physicians and patients, thereby making it difficult to provide patient-entered care (Reuben et al., 2016). Physicians and other health care professionals are usually distracted when using computers while engaging with patients (Crampton et al., 2016), thereby making it difficult to provide care that meets the needs of every patient.

Little is known regarding the effect of the EHR on the quality of communication between patients and physicians. Alkureishi et al. suggested the need to conduct future studies aimed at investigating the effects of EHR use on physician–patient communication with a particular focus on the inpatient care setting. Alkureishi et al. reviewed a number of articles and found that 31 studies were conducted in the United States, and only 2% of them took place in inpatient care settings. The findings presented by Alkureishi et al. showed that little is known about the effects of the EHR use on physician–patient communication, especially in the inpatient care setting. This can make it difficult to provide patient-centered care, which can improve health outcomes and patient safety in these settings. This informed me to conduct the current study to understand the effects of MEHR use on physician–patient communication during medical encounters.

It is difficult to understand how EHR affects communication between physicians and patients because previous studies conducted on this subject have reported mixed

findings. For instance, Patel et al. (2019) and Rathert et al. (2017) conducted studies that produced mixed results indicating both positive and negative effects of EHR use on the communication between physicians and patients. Findings showed that there is a problem when it comes to understanding of the effects of MEHR on physician–patient communication. Rathert et al. reported the need to investigate the impact of technology on communication functions. Rathert et al. noted that technology can have negative effects when it comes to communication between physicians and patients. Asan et al. (2016) suggested that future studies should focus on investigating practical ways to help with engaging patients verbally while simultaneously managing data using the EHR. The current study addressed the problem in understanding how MEHR affects communication between physicians and patients.

Purpose of the Study

The purpose of this qualitative study was to examine and understand the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. MEHR is a computer-mediated (workflow) system used to store patients' health information. For this study, MEHR implied the computer itself, which is used in the process, including screen and keyboard. EHR is a digital version of an automated, paperless, online medical record used by authorized health practitioners to enter a patient's medical data. A review of literature showed that limited studies had been conducted to investigate the effects of MEHR use on physician–patient communication, especially in the outpatient care setting. Therefore, findings from the current study may be helpful to both patients and health care providers.

It is important for health care providers to understand whether the use of EHR affects the interaction between patients and physicians to develop strategies that could help them provide high-quality health care. Physicians will be able to provide health care services that meet the needs of their patients. Rathert et al. (2017) suggested the need to carry out a more intensive assessment of the impacts of EHR on communication functions to ensure provision of patient-centered care. In the current study, I investigated this topic to provide relevant findings that will help to understand how this technology can affect communication between physicians and patients.

In this study, I used structured interviews to collect data to provide an understanding of the effects of this technology on physician–patient communication. I used structured interviews to collect relevant information from physicians and patients concerning how the EHR affects their communication during medical encounters in the outpatient care setting. To achieve this objective, I used the qualitative research approach that involved interviews to collect important information from the participants. I used a health care facility as the case organization to help increase the understanding of how MEHR affects communication between physicians and patients. The use of a specific case organization enabled me to focus on one area by providing adequate and reliable findings that were needed to answer the research questions.

Research Questions

Research Question 1: How do patients perceive the effects of the mediated electronic health record (MEHR) on their communication with physicians during the medical encounter?

Research Question 2: How do physicians perceive the effects of the mediated electronic health record (MEHR) on their communication with patients during the medical encounter?

Nature of the Study

The nature of this study was qualitative, which emphasizes meanings and interpretations and allows the researcher to understand other people's perspectives (Morgan, 2018). Qualitative methodology is mainly explorative, and it helps the researcher to understand the underlying reasons, motivations, and opinions about research interests. Researchers also use this approach to provide them with insights into the problem or help them develop ideas or hypotheses for quantitative research. For the current study, qualitative methodology was used to gain an understanding of the perceptions of physicians and patients regarding the impact of MEHR use on their communication during medical encounters. This method was consistent with the research problem, which focused on understanding the perceptions of patients and physicians regarding the effects of MEHR on their communication in the outpatient care setting. Both physicians and patients were interviewed to collect their views regarding the effects of MEHR on their communication during medical encounters. The approach aligned with the problem statement because it enabled me to collect information from both physicians and patients by formulating an informed conclusion on how MEHR use affects physician–patient communication. Additionally, this research was carried out in the hospital in the outpatient care setting. The qualitative approach was more appropriate because it allowed me to explore the perceptions of participants. After collecting data

from the participants, I used content analysis to analyze data and make interpretations and conclusion.

Definitions

Electronic health record: A digital version of an automated, paperless, online medical record used by authorized health practitioners to enter a patient's medical data. The records are in real-time, and patient centered, thereby making information available to the authorized medical practitioner (Alkureishi et al., 2016).

Mediated electronic health record: A computer-mediated (workflow) system used to store patients' health information. Mediated electronic record implies the computer itself, which is used in the process, including screen and keyboard (Ajami and Bagheri-Tadi, 2013).

Medical encounter: The information gained from an interaction between a patient and a physician. Medical encounter can also be defined as management of the medical document for the entire medical procedures of a single medical problem (Patel et al., 2019).

Outpatient setting: An environment in which patients receive treatment and any other health care service without staying in the hospital or health care facility overnight (Skochelak, 2020).

Patient-centered communication: Quality communication between the patient and the physician with an aim of eliciting and getting to know more about the patient's perspective, psychosocial context, cultural context, and shared understanding of the patient's issues (Alkureishi et al., 2016).

Assumptions

The first assumption was that heavy keyboarding negatively affects how physicians communicate with patients during medical encounters. Secondly, I assumed that screen gazing negatively affects how physicians communicate with patients during medical encounters. Lastly, I assumed that positioning of computer monitor can affect physician–patient communication negatively or positively.

Scope and Delimitations

The study was conducted in an outpatient care setting. Data were collected from 10 participants including five physicians and five patients in the hospital by using interviews as the research instrument. Through the interviews, I was able to gather data on the attitudes, opinions, views, and feelings of the respondents regarding the issue under investigation. Furthermore, I was in a position to interview the participants further to collect valid responses.

Limitations

The first limitation was related to time frame, which forced me to interview only five physicians and five patients, which was a small sample size. Additionally, the COVID-19 pandemic made it difficult to obtain an adequate number of participants. The second limitation was related to the use of purposive nonprobability sampling to recruit study participants.

Significance

I filled the existing knowledge gap in the literature by using a qualitative approach to investigate the effect of MEHR use on physician–patient communication in

the outpatient care setting. I recognized that many studies had been conducted in this field to understand more about MEHR use on physician–patient communication during the medical encounter. However, most of these studies had been conducted by using a quantitative approach that did not probe participants further, thereby making it challenging to have an in-depth understanding of how screen gazing, heavy keyboarding, and computer position affect physician–patient communication (Asan et al., 2016; Farber et al., 2015; Patel et al., 2019; Rathert et al., 2017). Qualitative research can provide an in-depth understanding of contexts and processes because it allows researchers to develop relationships and meaningful interactions with participants, thereby enabling them to identify social processes that could otherwise remain undetected (Merriam & Grenier, 2019). Using a qualitative approach to study MEHR use in the outpatient care setting contributed in-depth information that helped me to understand this topic. Additionally, this research filled a gap in the literature by focusing on the outpatient care setting, which was an area that had not been adequately researched (see Alkureishi et al., 2016).

The practical significance of this study was its ability to provide health care organizations with relevant information on how MEHR use affects physician–patient communication in outpatient care settings. Effective communication is critical to achieving patient-centered care. However, little was known about the effects of MEHR on how doctors communicate with patients in the outpatient care setting, thereby making it difficult to provide quality care that meets the needs and preferences of patients. As noted by Alkureishi et al. (2016), little research had been conducted on the effects of MEHR use on physician–patient communication in the outpatient care setting. Therefore,

it was necessary to conduct this study to help health care providers by providing them with useful data for improving communication. The findings of this study may be beneficial to health care providers, allowing them to understand the effects of MEHR on the dialogue between patients and physicians in the outpatient care setting. This understanding may encourage the leadership of organizations to develop appropriate measures for improving this communication to provide patient-centered care.

Furthermore, the findings of this study may contribute to social change because they may provide an understanding that may help to improve health outcomes. By understanding the effects of MEHR technology on physician–patient communication, providers may develop measures to improve communication to provide patient-centered care that may enhance the health and well-being of patients. Patient-centered care involves the provision of care that respects and responds to the needs, values, and preferences of individual patients, thereby ensuring that clinical decisions are based on patient values. This type of care can be provided when there is effective communication between physicians and patients.

It was necessary to conduct the current study to provide findings that health care providers can use to improve communication between physicians and patients when they are using MEHR. With enhanced communication, it may be possible to provide quality health care that meets the values, preferences, and needs of patients, thereby contributing to social change in many ways. For instance, healthy people may contribute their efforts and resources to build or change society. Health care organizations may be able to promote the well-being of society members. By changing individuals' behaviors, this

study may contribute to social change because it may encourage empowerment and involvement among members of the society.

Summary

This chapter provided the background of the study, problem statement, and purpose of the study, which was providing an understanding of the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. This chapter also provided two research questions that the study addressed as well as the nature of the study. Additionally, this chapter provided definitions of key words, assumptions, scope and delimitations, limitations, and significance of the study. In Chapter 2, I review literature on related studies that had been conducted on this topic.

Chapter 2: Literature Review

Little is known regarding the effects of MEHR use on the communication between physicians and patients. Consequently, it becomes difficult for providers to implement measures that could improve communication between physicians and patients when using MEHR, which may affect health outcomes and patient safety. The purpose of this qualitative study was to examine and understand the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. This literature review focused on the effects of MEHR on physician–patient communication in the health care setting. Findings from the current study may be used to enhance quality care and offer preliminary guidelines on how physicians can use EHR effectively for successful communication with their patients.

Chapter 2 includes an empirical review of the literature concerning the effect of the EHR on physician–patient communication. The EHR has been widely adopted by many health care's globally to enhance the quality of care. Physicians believe EHR systems have been beneficial by enabling them to give proper attention to patients including reducing medical errors, increasing care efficiency, reducing costs, improving quality and access, and enhancing patient satisfaction. However, some physicians are concerned about the possible negative effect that EHR systems have on health care, such as interfering with physician–patient communication during care delivery (Farber et al., 2015). Chapter 2 includes a review of the literature that was available on the EHR effect on physician–patient communication.

Literature Search Strategy

A systematic literature review was conducted to provide a comprehensive, protocol-based review and synthesis of the research that addressed the research topic. The approach included relevant synonyms and related terms for electronic medical information and information retrieved from the outpatient-centered care (see Roehrs et al., 2017). The search involved the use of three categories of words with the first one being *outpatient-centered care*, the second being *patient-centered communication*, and the third being *electronic health record*. The three words were essential in ensuring that relevant articles were reviewed.

Reviews were then conducted systematically whereby the questions addressing the basis of the search strategy outlined through the use of population, intervention, comparator, and outcome (PICO) elements were included. PICO is useful in defining the research population (participants), intervention used, observational studies, comparators, main alternative interventions, and outcomes of the research (Roehrs et al., 2017). The use of PICO was essential because it permitted the use of a systematic approach to the literature search from bibliographic databases (see Xiao & Watson, 2019). The search outcomes were then assessed to enable exclusion and inclusion in the review. Review of peer-reviewed articles was conducted with relevant publications considered in the research. A long list of articles was generated, and I reviewed each article independently.

Theoretical Foundation

I employed the media richness theory, a model that explains the effect of computer-mediated communication systems on effective decision making by the

physicians in their undertakings (see Liao & Teng, 2018). The theory was developed in 1986 by Daft and Lengel as an extension of the information processing theory (Bergin, 2016). The theory is useful in ranking and evaluating the richness of communication media used in the communication process, including the differences realized in the use of different media or forms of communication (Liao & Teng, 2018). While using the EHR, physicians should understand how the decisions they make will impact the quality of treatment they offer their patients. Some of the vital areas that impact the decision made by physicians include a multiplicity of the information and immediacy of the feedback given (Ishii et al., 2019).

Ideally, the information about the client and feedback provided are important in understanding the patient's social perceptions, ability to perform self-evaluation, and clarity of the message. The model helps in examining face-to-face communication between the patient and the physician, electronic meeting, as well as electronic mail communication systems. According to Ishii et al. (2019), multiple cues are capable of generating higher levels of information transfer between the patient and the physician. Liao and Teng (2018) also had the same idea and argued that increased information transfer is essential for achieving a clear understanding of the information shared between the communicators.

Conceptual Framework

The conceptual framework was developed based on the media richness theory. The model maintains that communication is not constant, and it is widely used in patient-centered care because of the ability to have face-to-face communication between the

patient and the physician (Susskind & Maynard, 2019). Susskind (2019) asserted that the EHR is quickly becoming the latest technology for physicians, and there is a need to master its use. Media richness in decision making between two people is important, and physicians should have a better understanding of how to use the new technology to ensure they perform their mandate adequately.

The model recognizes that physicians are human beings, and they should be able to handle multiple information cues when working with patients (Bergin, 2016). Additionally, the model implies that physicians should be able to facilitate rapid feedback and be able to establish a personal focus with the patient. The utilization of natural language is also essential when it comes to communication between the physician and the patient. Daft and Lengel (1984, as cited in Bergin, 2016) asserted that physicians should be highly sensitive to richness requirement when attending to clients. As applied to the use of EHR, physicians should be able to show that they care about the patient by using the tool to ensure a better synthesis of important health information. Caring is a central philosophy of the physician profession, and there is need to have good communication skills as well as proficient technological skills (Susskind & Marynard 2019). Physicians should apply their communication skills to ensure that the EHR is used successfully to understand the patient's needs.

Literature Review

EHR and Communication in the Health Care Setting

To understand the impact of the EHR on physician–patient communication in the outpatient care setting, it would be significant to understand the concept of the EHR and

the health care system. Balestra (2017) defined the EHR as one of the innovations and advancements in health information technology created to reduce costs and improve the quality and efficiency of care to save more lives. The academic medical centers developed the EHR system with the idea of compiling health information of patients so that it could be shared and managed centrally. Alternatively, Menachemi and Collum (2018) defined the EHR as the health information of patients that has been recorded electronically and used during care delivery. The information included in this record includes progress notes, vital signs, problems, immunizations, patient demographics, radiology reports, medications, vaccinations, and laboratory data.

The integration and implementation of the EHR in the health care system has risen and brought various benefits including enhanced efficiency, reduction of medical errors, computer records that are easily accessed, reduced costs, and improved quality of care (Menachemi & Collum, 2018). According to Farber et al. (2015), improvement of efficiency may be due to reduced office visits. Reductions in costs result in a decrease of adverse events and errors and improved management of chronic disease and preventive care, which results in savings of up to $81 billion per year with the implementation of the EHR (Farber et al., 2015). However, physicians and patients are concerned about the potential adverse impacts that the EHR system has on health care delivery, such as interfering with the interaction/communication between clinicians and patients by turning the attention of physicians away from the patient and toward the computer (Weizer et al., 2018).

Kourakos et al. (2017) explained that communication lies at the center of the relationship between the patient and physician, which is perceived to influence the outcome of patients significantly. This has been supported by Weizer et al. (2018) who argued that clinician–patient communication is a crucial health care delivery element and a substantial contributor to patient results such as patient adherence, trust, satisfaction, and rapport. Rathert et al. (2017) also reported that effective communication between patients and physicians provides many benefits, including patient adherence to doctor recommendations and patient satisfaction, among others. According to Patel et al. (2019), delivering patient-centered care is integral in ensuring active participation and patient engagement, which will lead to positive results. Positive physician–patient communication has been indicated to increase patient satisfaction, and a decrease in stress and anxiety among patients has been correlated with improved interaction as well as improving clinical outcomes (Farber et al., 2015).

Furthermore, Kourakos et al. (2017) asserted that health care communication between the provider and patient in the inpatient care setting, in which the patient stays for more than 1 day, aims at creating excellent interpersonal association, enhanced information exchange, and participation of patients in the process of decision making. This has the potential to assist in regulating the feelings of patients, facilitating medical information understanding, and better identifying perceptions, expectations, and needs of patients. Patients reporting better communication with their provider are more likely to be content with their care; the EHR correctly provides information for precise diagnosis of

their issues, following medical instructions, and being compliant with treatment prescribed for them (Kourakos et al., 2017).

Patel et al. (2019) maintained that the effective communication style of the physician and patient forms a high-quality health care foundation. Communication skills have been revealed to influence the satisfaction of patients, which in turn is used to evaluate health care delivery efficacy as well as serving as a proxy for the quality relationship between physicians and patients. For instance, a study on the interaction between providers and patients indicated that clinicians who maintained high eye contact levels had better satisfaction among patients (Patel et al., 2019). Poor communication may act as an obstacle to the attainment of patient-centered health outcomes. The following sections provide a detailed discussion of the effects of the EHR on physician–patient communication.

Physicians and Communication

Daft and Lengel (1984 as cited in Bergin, 2016) pointed out that interpersonal communication is a key ingredient in medical encounters. Communication is an ongoing process of collecting and processing relevant information about the patient to find out who they are and what they are. Communication allows physicians to have a clear picture of their patients' world to respond to them appropriately. The competent use of communication enhances the performance of physicians (Susskind, 2019).

Caring and Communication

In a traditional perspective, caring was seen as holding the patient's hand and helping them overcome their worries; however, the perception has taken on new meaning

with the advancement of technology (Bergin, 2016). Physicians are required to use communication and technology proficiently to help patients in a caring manner to help support them in their health care needs. Physicians are required to use their communication skills to understand patients fully. Communication should be used as a medium for reducing conflict between the physician and the patient; therefore, when using the face-to-face medium in their undertakings, physicians should be able to understand the patient's worries and respond to their needs adequately (Susskind, 2019). Daft and Lengel (1984, as cited in Bergin, 2016) asserted that the change from analogue to digital record keeping is one of the greatest innovations in the medical sector, media during a consultation should be used effectively to respond to the patient's needs.

Screen Gazing and Physician–Patient Communication

Eye gaze refers to an individual focusing their eye direction (Rathert et al., 2017). Eye gaze is used to understand the connection between physicians and patients, and their EHR attention for two purposes. First, gaze gives a more measurable and objective sign of communication and care. Second, gaze is a feature that can inform guidelines of design. Third, gaze is an important aspect of nonverbal communication (Denault & Dunbar, 2017). Nonverbal communication is useful for understanding significant variables associated with designing human- or user-centered systems. For instance, body language and posture can provide signals of satisfaction or comfort. Facial expressions can give more objective satisfaction assessments or emotional state, and eye gaze can demonstrate attention being given to people or other objects.

Drawing upon this background, some studies have documented that computer use may have the potential to improve communication between patients and physicians and increase the satisfaction of patients. For instance, a study conducted by Lee et al. (2016) revealed that most patients had positive perceptions of the EHR, which equated to high satisfaction levels. The use of the computer may diminish positive communication signs, like eye contact, and could make patients feel detached or that their provider is less attentive (Menachemi & Collum, 2018).

Kourakos et al. (2017) noted that data from various studies showed that the first few minutes of the provider–patient encounter were altered with the introduction of a computer in the examination room. With the presence of a computer, the first minutes of the consultation are frequently taken up with care providers interacting with the computer rather than the patient or talking about the agenda of the patient. Researchers have found that clinicians frequently walked straight to the computer after a brief greeting, with their opening statement prompted by the screen instead of inviting the patient to share their concerns (Kourakos et al., 2017). Additionally, providers find it difficult to divide their attention between the computer screen and the patient (Kourakos et al., 2017). Asan et al. (2015) found that physicians often spend much of their time gazing at the computer screen, which affects their relationship with patients. As a result, the computer frequently causes care providers to lose rapport with their patients (Rathert et al., 2017). The care providers usually look at the screen and type in data while interacting with the patient or while the patient speaks (Rathert et al., 2017).

Balestra (2017) supported these findings and asserted that eye contact is significant to patients during their communication with their health care providers. When providers turn away from the patient to use the EHR, patients can feel disengaged or ignored, thereby creating a communication barrier. Those actions potentially interfere with discussions with patients concerning test results, health status, and prescribed medications. This is especially true when working with computers that are mounted on the wall, which require nurse practitioners to turn their back on patients during data entry (Balestra, 2017). Farber et al. (2015) argued that the EHR may interfere with communication between physicians and patients, such as maintaining eye contact and paying attention to the concerns of patients by directing the attention of providers away from the patient and toward the EHR system. This is because the gaze time of physicians at the computer with EHR use increases especially during data entry and the confirmation of other relevant information of patients, leaving less time spent looking at the patients during treatment interactions (Farber et al., 2015).

The findings of Farber et al. (2015) validated the results of the study conducted by Patel et al. (2019). Concerning the findings, the authors concluded that eye contact is a significant indicator of attentiveness of primary care providers and interaction involvement. Thus, when a patient care provider spends a lot of time looking at the computer, this may disrupt the conversation flow, and the physician may be perceived by the patients as disengaged, less patient-focused, and distracted in the consultation (Patel et al., 2019). As such, while this may not be related directly to lower satisfaction of

patients, it could impact how involved patients disclose their own needs and concerns (Patel et al., 2019).

Heavy Keyboarding and Physician–Patient Communication

According to Balestra (2017), the rigorous requirements of entry of data are often carried out via user interfaces that are difficult to navigate, which can negatively affect provider-patient communication. In this case, font sizes and screens that are difficult to use, auto-fill functions or auto-correct, LED inadequate lighting, and a lack of hand-held barcode scanning devices makes keyboarding by physicians difficult during data entry. As a result, physicians spent more time on the computer, which interferes with the interaction between patients and physicians because it leaves little time to discuss patient concerns and health status (Balestra, 2017). Menachemi and Collum (2018) agreed that heavy keyboarding increases the mental workload of physicians, making it hard for them to engage in care that is patient-centered while simultaneously entering data.

According to Alkureishi et al. (2016), providers are unsuccessful at simultaneously concentrating on computer interactions that are complex while attending to the patient due to heavy keyboarding during data entry. Street et al. (2014) found that the main inefficiency of a lot of EHRs' current generation was the application of graphical user interface (GUI) windows, icons, menus, and pointers (WIMP) and form- and menu-based GUIs for the entry of data. Such systems need physicians to navigate deeply and browse through nested menus via long pull-down lists, which are neither contextualized nor filtered.

In addition, some simple tasks are broken down into distinct components requiring many clicks, scrolls, and points. Consequently, this leads to heavy keyboarding, which has a real impact on the ability of providers to communicate with patients while engaging with technology. In this case, physicians spent a lot of time on the computer, hence increasing the quiet time. Patients may feel ignored or neglected by the physician during data entry, and this adversely impacts the communication between the provider and patient. As such, patients had lower satisfaction and lower patient-centered care with reduced communication between them and the providers because heavy keyboarding reduced physicians' listening degree (Patel et al., 2019).

These findings are in agreement with the results of Margalit et al. (2006) who conducted a study to evaluate EHR use and physician-patient communication. The researchers documented that heavy keyboarding was evident in 24% of the visits that were studied, and this was inversely related to the visit dialogue amount contributed by the patient or the physician (Margalit et al., 2006). Specific effects of heavy keyboarding include: (a) improved biomedical exchange which entails more counseling and education of patients, (b) more questions concerning therapeutic regimen, and (c) enhanced patient medical information disclosed to the care provider. In summary, the researchers concluded that overall communication that is patient-centered during the visit is inversely correlated with keyboarding. As such, patients may regard the engrossment of physicians in computing tasks as disengaged or disinterested (Manias et al., 2018).

Computer Positioning and Physician–Patient Communication

The status or design of a computer in the healthcare setting also affects the communication between patient and physicians. Mwachofi, et al. (2016) conducted a study to understand patients' perceptions of EHR use in the physicians' offices. The researchers reported that the positioning of the computer monitor has a significant effect on the perceptions of patients (Mwachofi et al., 2016). For instance, positioning the monitor in a way that hindered physicians from maintaining eye contact with the patients led to negative perceptions of EHR use (Mwachofi et al., 2016). In contrast, patients felt more comfortable if the monitor was positioned in a manner that enabled them to see the screen contents (Mwachofi et al., 2016**).**

The findings of Mwachofi et al. (2016) are in agreement with Balestra (2017) who stated that the position of computers affects the interaction between physicians and patients. In this case, the author explained that when networks for EHR systems are mounted on the wall, it interferes with patient-physician communication since it requires nurse practitioners to turn their back on patients during data entry. As such, when clinicians turn their back when using the EHR or MEHR systems mounted on the wall, they lose eye contact with the patient, thus patients may feel ignored. When patients feel ignored, it creates a communication barrier, and possibly interferes with discussions concerning the health status, prescribed medications, and test results.

Furthermore, these findings further coincide with the conclusions from Carroll et al. (2017) who stated that when computers for EHR use are placed far away from patients, physicians have to go close to them when entering data or searching

information. In this case, this position of computers adversely affects communication between the physician and the patient because the physician will be away from the patient and will have to focus on the computer for the first few minutes of the visit in clinical rooms. This interferes with patient-provider information sharing and even discussing some vital information like patient progress, medication prescriptions, and the health status of the patient, all which are significant for patient-centered care and satisfaction (Carroll et al., 2017).

Summary

Patient-centered care is at the heart of patient satisfaction of care delivery. Communication between patients and physicians has been considered an essential health care delivery element and a substantial contributor to patient results. Consequently, it is perceived to influence the outcome of patients significantly. It is evident that EHR use affects provider-patient communication. One study revealed that EHR affects the communication positively while some researchers reported that it affects communication negatively (Farber et al., 2015; Rathert et al., 2017). For instance, physicians' screen gaze adversely affects clinician-patient communication because it makes physicians lose eye contact with their patients, thus interfering with discussions concerning health status and other important elements of the patient care during the visit. Secondly, heavy keyboarding also affects provider-patient interaction adversely because it increases the time that physicians spend on the computer and reduces communication time. Additionally, the positioning of the computer also impacts communication between providers and patients.

When computers are positioned in a manner that both the patient and physician can access it with ease, it encourages the sharing of screen gaze as well as communication between patients and providers. As such, patients perceive this useful information sharing to be correlated with patient-centered care and patient satisfaction of care delivery. However, when computers are positioned far away from patients, for instance, mounted on the wall, it interferes with patient-physician communication since it requires physicians to turn their back on patients during data entry. Thus, when nurse practitioners turn their back to use computers, patients may feel ignored and detect a communication barrier; it possibly interferes with discussions concerning the health status, prescribed medications, and test results of a patient.

Overall, with this information at hand, it is evident that EHR system use negatively affects patient-physician communication (Mwachofi et al., 2016; Rathert et al., 2017). Therefore, healthcare settings that have implemented or plan to implement the EHR system should take necessary precautions to ensure that EHR use does not negatively impact communication between patients and physicians. For instance, healthcare organizations should provide training for their care providers on how to efficiently use EHR and design the outpatient and consultation rooms with computers in a way that can encourage communication between patients and providers during visits. In Chapter 3, the research methodology will be presented.

Chapter 3: Research Method

The purpose of this qualitative study was to examine and understand the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. This study focused on the effects of MEHR on physician–patient communication in the outpatient care setting to enhance quality care and offer preliminary guidelines on how physicians can use MEHR for successful communication between them and their patients. The research questions were the following: How do patients perceive the effects of MEHR on their communication with physicians during the medical encounter? How do physicians perceive the effects of MEHR on their communication with patients during the medical encounter? Chapter 3 provides the methodology I used to investigate the effects of MEHR use on physician–patient communication in outpatient care settings. I explain the research design, research strategy, data type, sampling procedure, data collection and analysis techniques, research philosophy, issues of trustworthiness, and ethical considerations. The final section provides a summary of the key points presented in this chapter.

Research Design and Rationale

Researchers can incorporate qualitative, quantitative, or mixed methods designs. Bryman and Bell (2015) pointed out that in quantitative research, researchers examine the relationship between variables through the use of numerical data. To conduct this study, I used a qualitative design because of its ability to explore participants' thoughts about the effects of MEHR use on physician–patient communication in outpatient care settings. The collected data enabled me to evaluate how MEHR affects physician–patient

communication in outpatient care settings to formulate conclusions regarding the research.

Role of the Researcher

My role as the researcher was to select study participants, collect and analyze data, and make an informed conclusion. I did not have any personal or professional relationship with the participants because of the impact this could have had on the validity and credibility of the study. I avoided researcher bias by remaining open during recruitment to ensure that participants selected were not known to me. This study was not sponsored, which allowed me to avoid any conflict of interest. Additionally, this study was not conducted within my work environment.

Participant Selection Logic

I sampled physicians and patients to participate in this study. To identify potential physicians to take part in the study, I asked a partner organization to provide me with a list of physicians who met the inclusion criteria. To recruit potential patients for the study, I approached individual patients in the waiting room and explained to them the purpose of the study. I asked them if they were willing to participate in the study and to provide their email addresses if they were interested. I used the email addresses of physicians and patients to send them an invitation letter and a consent form as an attachment to the email. Prospective participants reviewed the consent form, and those who agreed to participate replied to the email. Their reply to my email confirmed that they consented to participate in the study. I engaged the identified physicians and patients in the hospital setting. I employed purposive sampling, which provided the opportunity to

select participants who would provide in-depth information about the research topic. The selected physicians were active physicians working at the hospital under study. The patients who were selected for the study received outpatient treatment at least once at the study site organization. Additionally, patients were at least 20 years old and were able to provide informed consent on their own. I selected a total of 10 respondents who took part in the interviews.

Instrumentation

Research Strategy

According to Eriksson and Kovalainen (2015), a research strategy is a comprehensive plan that researchers use to explore a certain phenomenon and gather appropriate data for answering the research question. The most commonly used research strategies include observations, ethnography, case studies, experiments, and surveys (Sekaran & Bougie, 2016). For this study, I used a case study design to collect relevant information to answer the research questions. Case study research is also useful in collecting data from a relatively small sample size. The strategy helped me to gather in-depth data concerning the effect of screen gazing and heavy keyboarding on physician–patient communication when using EHR. Additionally, I was able to understand how the positioning of the computer used in patient rooms to access mediated EHR affects how physicians communicate with patients.

Moreover, I chose the case study design to provide recommendations that could work best for the hospital. The management may use the recommended strategies to improve communication between physicians and patients in the outpatient care setting

because the respondents are physicians working for the organization and the patients are receiving care from the same facility. I assumed their perspectives and opinions would be representative of other physicians and patients. Therefore, the case study was the most suitable strategy to collect data for answering the research questions.

Data Type

According to Patten and Newhart (2017), researchers use of either primary or secondary data sources and some incorporate a mixture of the two. For this study, I collected data from 10 participants, including five physicians and five patients, in the hospital under study by using interviews as the research instrument. Through the interviews, I collected data on the attitudes, opinions, views, and feelings of the respondents regarding the issue under investigation. Furthermore, I was able to interview the participants further to collect valid responses.

Data Collection

The research data were collected from 10 participants (five physicians and five patients) in the outpatient setting by using interviews as the research instrument. I sent the interview questions to research participants who responded to the questions via email.

Data Analysis Plan

I used content analysis to analyze data on the effect of MEHR use on physician–patient communication in outpatient care settings. In this analysis, I developed coding schemes and categories and defined thematic areas. Appropriate inferences were derived, and I compared the results with the literature that was reviewed in Chapter 2.

Issues of Trustworthiness

Credibility

One way in which I ensured credibility of the study was through reflexivity whereby I examined my judgments, practices, and beliefs to ensure that they did not affect the research process negatively. I also employed triangulation to achieve credibility by collecting data from physicians and patients.

Transferability

Transferability was achieved by providing detailed description of the research context, including selection of participants, data collection, and analysis of findings.

Dependability

To achieve dependability, I collected data from both physicians and patients. By investigating the perceptions of both patients and physicians, it was possible to determine whether the findings obtained were dependable.

Confirmability

I achieved confirmability because of the strategies I used, including an audit trail in which I provided details on the process of data collection, data analysis, and data interpretation to make it easy for other researchers to replicate this study and confirm the findings.

Intra- and Intercoder Reliability

Regarding intercoder reliability, I made efforts to code the data collected in a consistent manner. I was very consistent in the manner I was coding my data to enable me to make appropriate decisions. I ensured intercoder reliability by using two

independent coders who evaluated the data collected to make a similar conclusion to my deduction.

Ethical Procedures

Before beginning a study, researchers should obtain institutional review board (IRB) approval to avoid legal implications that could affect their research. Federal regulations state that the IRB should review research projects that involve human subjects (Boling et al., 2018). The IRB has the prerogative to approve or reject the study. I obtained approval from the IRB at Walden University (IRB Number: 10-09-20-0437172) to conduct interviews with the study participants. Flick (2018) explained that researchers should consider ethical issues when conducting their studies to ensure the credibility and reliability of their findings. Some of the important ethical issues that researchers should consider include anonymity, confidentiality, privacy, voluntary participation, and consent.

I allowed each respondent to give their consent to participate in the research. Participation in the research was voluntary, and no participant was manipulated to engage in the process. I informed the respondents that they were free to withdraw from the study at any time during the research process without any consequence. For this study, I did not collect personal information such as a social security number, marital status, and identity to adhere to confidentiality and to maintain privacy. I also ensured safe storage of data to ensure that they were kept confidential.

Summary

In this chapter, I provided background information on the research design that was adopted in this study as well as the rationale of the design chosen. The study was conducted using a qualitative research design because of its ability to explore participants' thoughts about the effects of MEHR use on physician–patient communication in outpatient care settings. To collect relevant information necessary to answer the research questions, I adopted a case study research design. I collected data from 10 participants (five physicians and five patients) in the hospital by using interviews as the research instrument. Additionally, the sampling technique used in this research was purposive sampling, which is a type of nonprobability sampling. Purposive sampling created an opportunity for participants to provide in-depth information about the research topic. Furthermore, the chapter also addressed issues of trustworthiness in the study.

Chapter 4: Results

The purpose of this qualitative study was to examine and understand the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. To achieve this purpose, I focused on two research questions. The first research question addressed how patients perceive the effect of the MEHR on their communication with physicians during medical encounters. The second question addressed how physicians perceive the effects of the MEHR on their communication with patients during medical encounters. In this chapter, I provide a detailed analysis of the research findings obtained during the study. I employed content analysis to analyze data obtained from the respondents who are physicians working at the hospital and patients who received treatment at the facility. The chapter begins by presenting the demographics and responses of the interviewees, which are followed by analysis of the responses. The final part provides a summary of the chapter.

Demographics

This study included five physicians and five patients as research participants. In terms of demographics, the physicians were 25 years and included both men and women. Additionally, physicians had at least 2 years of experience with EHR, and they were employees of the hospital with different specialties. The patients selected for the study were both male and female and they were age 20 years and above. Additionally, patients had a basic education because they had to know how to read and write. Lastly, the patients recruited for the study had at least 1 year of experience with EHR encounters. The hospital had been providing outpatient services for the last 5 years and had a fully

operational EHR. Additionally, the hospital had a good working relationship with physicians, which this was necessary to avoid obtaining biased responses.

Data Collection

I collected data from 10 participants consisting of five physicians and five patients. Data were collected via email whereby I sent interview questions to each participant's email. This was a variation in the initial plan of collecting data via physical interviews because of the COVID-19 pandemic, which led to restrictions in movement. The unusual circumstance observed in data collection was the delay in submitting responses to interview questions. Some participants took a long time to provide responses to interview questions.

Analysis of Data

To prepare the interviewees for the interview session, I asked physicians how long they had been working at the hospital and their occupation. Physicians 2, 3, and 4 had worked in the hospital for 6 years each while Physician 1 had worked there for 7.5 years. Physician 5 had worked there for 1.5 years. I also asked the physicians their occupation in the hospital, and their responses indicated that they were all physicians serving in different positions in the organization.

Physicians' Perceptions of the Effects of MEHR on Their Communication With Patients

To understand physicians' perceptions regarding the effect of MEHR on their communication with patients, I asked the physicians questions about screen gazing, heavy keyboarding, and positioning of computer monitor. When I asked the physicians

how screen gazing hindered them from keeping an eye contact with patients, Physician 1 responded that it does not affect him because he does not use it when he is attending to patients. Physician 2 asserted that she finds it hard to keep eye contact with her patient because she has to look at the screen and this makes some patients feel detached. In responding to the same question, Physician 3 explained that he usually finds it hard to divide his attention between patients and the computer screen. He added that he usually asks questions while looking at the screen, thereby making it hard to keep eye contact with patients as supported by Kourakos et al. (2017). Physician 4 asserted that he usually shifts his attention away from the patient to the computer and he hardly looks at the patient in the eye. Physician 5 asserted that he usually avoids too much screen gazing because patients need eye contact to develop trust.

I also asked the physicians whether they believed screen gazing can make patients feel detached. All five physicians agreed that screen gazing can make patients feel detached, which confirmed the findings of Menachemi and Collum (2018). Physician 5 asserted that eye contact and body language are part of building trust. Physician 4 explained that some patients feel detached because physicians are only paying attention to the computer and not to them.

To understand how heavy keyboarding affects physician communication with patients, I asked physicians how heavy keyboarding hinders them from communicating effectively with patients. Physician 1 said that it was not applicable to him because he works in anesthesia and does not use it when with patients. Physician 2 asserted that she spends a lot of time entering patients' data in the system, which affects the amount of

time available to discuss patients' problems. In responding to the same question, Physician 3 explained that heavy keyboarding leads to quiet time in the room and patients may feel that he is ignoring them, which may affect their trust level. Physician 4 also agreed that heavy keyboarding affects his communication with patients because they feel ignored, while Physician 5 disagreed.

The physicians were also asked whether they find it easy to respond to patients' comments and questions when entering data on the computer. Physician 1 asserted that this was not applicable to his case because he works with anesthesia patients. For the other four physicians, it was not easy because of the distractions. Physician 3 asserted that it is challenging because he cannot listen to the patient attentively while typing on the keyboard as supported by Patel et al. (2019).

To understand how positioning of the monitor affects communication between physicians and patients, I asked the physicians about the positioning of the computer they use in the clinical room and how it affects their communication with patients. Physician 1 asserted that it was right at the patient's bed, but it was not applicable to his case because he works with anesthesia patients. In responding to the same question, Physician 2 said that the computer is directly in front of her and adjacent to clients. She added that the positioning of the monitor does not affect her communication with patients because she is able to keep eye contact with them. Physicians 3, 4, and 5 explained that the computer is directly in front of their desks, which is opposite of where their clients sit. Physician 3 mentioned that the positioning of the monitor blocks him from keeping eye contact with patients, which makes it difficult to engage them effectively, as reported by Mwachofi et

al. (2016). Physician 5 said that it can sometimes interfere with eye contact and obstruct the patient's view.

Near the end of the interview session, physicians were asked whether they were satisfied with the use of computer in the clinical room. It was not applicable to Physician 1 based on his response. Physician 5 reported that he was satisfied because the computer ensures availability of patients' medical information. However, Physicians 2, 3, and 4 reported that the use of computer was affecting their communication with patients (see Appendix B).

From the physicians' responses, I concluded that MEHR affects communication between physicians and patients. First, physicians reported that screen gazing hinders them from keeping eye contact with patients, thereby making patients feel detached. This was consistent with the findings of Menachemi and Collum (2018) who reported that screen gazing diminishes positive communication signs such as eye contact, thereby making patients feel detached. Second, heavy keyboarding affects how physicians communicate with patients because of the divided attention. Physicians are not able to concentrate on the patients while entering data as explained by Alkureishi et al. (2016). Additionally, heavy keyboarding also affects physicians' listening, which was consistent with the findings of Patel et al. (2019). Lastly, the responses also showed that the computer positioning affects how physicians communicate with patients. The positioning of the computer screen can block physicians from keeping eye contact with patients as reported by Mwachofi et al. (2016).

Patients' Perceptions of the Effects of MEHR on Their Communication With Physicians

I asked patients questions related to screen gazing, heavy keyboarding, and computer position to understand their perceptions regarding the effects of MEHR on their communication with physicians. Regarding heavy keyboarding, I asked patients about their experience of their doctors' heavy keyboarding during data entry. Patient 1 explained that he had experienced this but not to a degree that made him uncomfortable because his doctor usually asked him questions while keeping eye contact and recording the answers on his keyboard. Patients 2, 3, and 4 said that it was not a bad experience although they had a feeling that their doctors were not giving them attention. Patient 2 asserted that her doctor usually spends much time on the keyboard when entering data although she would not say it was a bad experience. However, Patient 5 had a bad experience in one hospital. He said that the doctor did not talk to him for 10 minutes because he was typing on the keyboard, and this made him upset.

To understand further the effects of heavy keyboarding, I asked patients to explain how heavy keyboarding during data entry affects how their doctors communicate with them. All of the respondents agreed that heavy keyboarding affects how their doctors communicate with them because it becomes challenging to keep eye contact. Patient 1 asserted that if the keyboarding is heavier than normal, he feels as if the doctor has no interest in being personable. This affects him as a patient because his doctor cannot keep eye contact with him, thereby affecting his trust level. This was consistent

with the findings of Manias et al. (2018) who reported that such behaviors can lead to disengagement of clients.

To understand how screen gazing affects communication between physicians and patients, I asked patients whether they find it easy to talk to their doctor when they enter data on computer while gazing at the screen. Patients 1 and 2 said that it was easy for them to talk to their doctors. Patient 1 explained that he was confident that the doctor was recording his responses and entering them accurately into the chart. In contrast, Patients 3, 4, and 5 had a different opinion regarding the situation, asserting that it is not easy to talk to the doctor when they are entering data and gazing at the screen. Patient 5 explained that his doctor gazes a lot at the screen and this makes him feel that she does not care about him. Patients' responses echoed the findings by Kourakos et al. (2017) who observed that physicians usually find it hard to divide their attention between patients and the computer screen. Additionally, Asan et al. (2015) reported that physicians spend a lot of time gazing at the computer screen, thereby affecting how they relate to patients.

The patients were also asked about the positioning of their doctors' computer monitor and how this affected their communication. Patient 1 asserted that the computer monitor is in front of him but facing the door. He explained that the positioning does not affect how he communicates with his doctor. When asked the same question, Patient 2 said that the computer monitor is adjacent to where he sits and this allows him to communicate effectively with his doctor because he is able to maintain eye contact. Patient 3 asserted that the computer monitor is placed in a manner that enables her to see

the contents, thereby motivating her to develop trust in her doctor, consequently improving their communication as supported by Carroll et al. (2017). In responding to the same question, Patients 4 and 5 asserted that computer monitor is positioned directly opposite where they sit. For Patient 4, the positioning of the computer blocks his doctor from maintaining eye contact while Patient 5 asserted that he was not able to see the contents of his doctor's computer, thereby losing trust in her.

To conclude the interview session, I asked the patients whether they were satisfied with their doctors' use of the computer in the clinical room. Patients were also asked to make recommendations that would improve their communication with physicians during clinical visits. Patient 1 asserted that he was satisfied with his doctor's use of computer, explaining that it is appropriate to use the computer before and after the exam. However, Patient 1 recommended that physicians should ensure verbal and physical eye contact occurs as much as possible. Patient 2 explained that he was satisfied although the use of computer sometimes affected how the doctor communicates with him. Patient 2 also recommended the need for physicians to keep eye contact with patients. Patients 3, 4, and 5 were not satisfied with their doctors' use of the computer because of the side effects. Patient 4 explained that the computer distracts his doctor, who does not give him attention, leading to loss of trust between them. Patient 4 recommended the need for physicians to strike a balance between their patients and computers to build trust and improve communication.

Summary

In this chapter, I presented responses from the interviewees (physicians and patients) and provided an analysis for each response. Both physicians and patients reported that MEHR affects communication between them. Physicians responded that screen gazing, heavy keyboarding, and positioning of the computer monitor negatively affects how they communicate with patients. Patients also reported that heavy keyboarding, screen gazing, and the positioning of computer monitor negatively affects how their doctors communicate with them during medical encounters. In response to the first research question, patients asserted that heavy keyboarding, screen gazing, and positioning of the computer monitor negatively affects how their doctors communicate with them during medical encounters. In response to the second research question, physicians reported that screen gazing, heavy keyboarding, and positioning of the computer monitor negatively affects how they communicate with patients. Positioning of the computer can either block or facilitate eye contact between physicians and patients. Heavy keyboarding distracts physicians, making it difficult to keep eye contact with patients. Lastly, screen gazing diverts the attention of physicians, leading to disengagement of patients.

Chapter 5: Discussion, Conclusions, and Recommendations

This study was conducted to provide an understanding of the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. The first research question addressed how patients perceive the effect of the MEHR on their communication with physicians during medical encounters. The second question addressed how physicians perceive the effects of the MEHR on their communication with patients during medical encounters. In this chapter, I provide a summary of key findings of the data analysis conducted in Chapter 4 to understand the perceptions of physicians and patients regarding the effects of MEHR on physician–patient communication. I begin by summarizing the major findings for the two research questions. This is followed by recommendations on the measures that health care providers can take to improve communication between physicians and patients when using EHR. Lastly, this chapter provides limitations of the study as well as suggestions for future studies.

Interpretation of the Findings

Physicians' Perceptions of the Effects of MEHR on Their Communication With Patients During the Medical Encounter

The data analysis revealed that physicians perceive MEHR as affecting their communication with patients. It was clear from the analysis that heavy keyboarding, screen gazing, and positioning of the computer contribute to ineffective communication between physicians and patients. Heavy keyboarding causes distractions making it hard for physicians to concentrate on patients. The positioning of the computer monitor blocks

physicians from keeping eye contact with patients, which can affect their communication negatively. Additionally, screen gazing can divert the attention of physicians from patients, thereby leading to disengagement. I concluded that physicians believe that MEHR negatively affects their communication with patients because of heavy keyboarding, screen gazing, and positioning of the computer monitor. This conclusion was consistent with the findings of other researchers who reported that heavy keyboarding, screen gazing, and positioning of the computer monitor affects physician–patient communication (Manias et al., 2018; Menachemi & Collum, 2018; Mwachofi et al., 2016).

Patients' Perceptions of the Effects of MEHR on Their Communication With Physicians During the Medical Encounter

The analysis of patients' responses also revealed that MEHR negatively affects how physicians communicate with patients. Screen gazing, heavy keyboarding, and positioning of the computer monitor play a key role in influencing physician–patient communication. The analysis revealed that screen gazing and heavy keyboarding make some patients feel detached because the doctor does not pay attention to them. Additionally, positioning the computer monitor in a manner that blocks their doctor from keeping eye contact with them leads to disengagement and loss of trust. Therefore, it can be concluded that patients also have negative perceptions regarding the use of MEHR because it affects how their doctors communicate with them due to heavy keyboarding, screen gazing, and positioning of the computer monitor. This conclusion was consistent with the findings of previous researchers that heavy keyboarding, computer positioning,

and screen gazing affect communication between patients and physicians (Asan et al., 2015; Carroll et al., 2017; Kourakos et al., 2017).

Limitations of the Study

I encountered two major limitations although I managed to answer the research questions. The first limitation was time frame, which forced me to interview only five physicians and five patients, which is a small sample size. Additionally, the COVID-19 pandemic made it challenging to recruit 20 participants as originally planned, which forced me to reduce the number to five patients and five physicians. This smaller sample size could have affected the validity and credibility of data. The second limitation was that I used purposive nonprobability sampling to recruit study participants. I did not use random sampling, which may have introduced biases. Nevertheless, the findings of this study may facilitate an understanding of how MEHR affects physician–patient communication.

Recommendations

Effective Positioning of the Computer Monitor

This study showed that positioning of the computer monitor can have a significant effect on physician–patient communication. Health care providers should understand how best to position the computer monitor to enhance communication between physicians and patients. First, the monitor should be positioned in a manner that allows physicians to maintain eye contact with patients. Second, the monitor should be positioned in a manner that allows patients to see the contents of screen. This will help to build trust between patients and physicians, consequently improving their communication.

Physician Training

This study's findings revealed that heavy keyboarding, screen gazing, and the positioning of the computer monitor can impede effective communication between physicians and patients during medical encounters. Therefore, it is important to provide physicians with adequate training to enable them to understand how they can enhance their communication with patients while using EHR. Physicians should understand how they can strike a balance between patients and their computers to ensure that patients are not disengaged. Physicians should avoid heavy keyboarding and gazing a lot at the screen when attending to patients in the clinical room to ensure that patients are engaged, thereby enhancing their trust and achieving effective communication. Physicians should learn how they can maintain eye contact with patients while typing on their keyboard and gazing at the computer to help develop patients' trust.

Sampling Method and Sample Size

First, future studies should include random sampling to select study participants to provide the target population with equal chances of being recruited, thereby reducing bias. Second, researchers conducting similar studies should use large sample sizes to increase the credibility and validity of their findings. This will also help to minimize chances of bias in their studies.

Implications

The findings of this study may contribute to social change by improving communication between physicians and patients, consequently enhancing quality of care and well-being of patients. At the individual level, the findings of this study may enable

patients to obtain quality care, thereby improving their well-being. Findings could also be used to develop policies for improving communication between physicians and patients to ensure provision of patient-centered care.

Conclusion

This study was conducted to examine and understand the perceptions of physicians and patients regarding how MEHR affects their communication during medical encounters in the outpatient setting. Based on the data collected and analyzed, I concluded that screen gazing, heavy keyboarding, and positioning of the computer monitor can affect physician–patient communication. Therefore, there is need for physician training to help them understand how they can keep eye contact with patients when using EHR.

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Appendix A: Interview Protocol

Interview Questions for Physicians

1. How long have you been working at the hospital?
2. What is your occupation in the company?
3. How does screen gaze hinder you from keeping an eye contact with your patient?
4. Do you believe this can make the patient feel detached? Please explain.
5. How does heavy keyboarding hinder you from communicating effectively with patients?
6. Do you find it easy to respond to your patients' comments or questions when entering data on your computer? Please explain.
7. What is the positioning of the computer you use in the clinical room?
8. How does the position of computer monitor affect how you communicate with your patients?
9. Are you satisfied with the use of computer in the clinic room? Please explain.

Interview Questions for Patients

1. What is your experience of your doctor's heavy keyboarding during data entry?

2. How does heavy keyboarding during data entry affects how your doctor communicate with you?

3. Do you find it easy to talk to your doctor when he/she is entering data on his/her computer while gazing at the screen? Please explain

4. What does the positioning of the computer monitor of your doctor?

5. How does the position of the computer monitor affect how you communicate with your doctor?

6. Are you satisfied with your doctor's use of computer in the clinical room? Please explain.

7. What improvements would you recommend helping enhance your communication with physicians during clinical visits?

Appendix B: Interview Records for Physicians

Physician 1

1. How long have you been working at the hospital?

7.5 years

2. What is your occupation in the company?

Physician – Anesthesiologist

3. How does screen gaze hinder you from keeping an eye contact with your patient?

Does not affect me as I do not use it when with the patient

4. Do you believe this can make the patient feel detached? Please explain.

Yes. Because I will not be able to keep an eye contact

5. How does heavy keyboarding hinder you from communicating effectively with patients?

N/A

6. Do you find it easy to respond to your patients' comments or questions when entering data on your computer? Please explain.

N/A

7. What is the positioning of the computer you use in the clinical room?

It is the right at the patient's bed

8. How does the position of computer monitor affect how you communicate with your patients?

N/A

9. Are you satisfied with the use of computer in the clinic room? Please explain.

N/A

Physician 2

1. How long have you been working at the hospital?

I have been working at the hospital for 6 years

2. What is your occupation in the company?

Am working as a physician

3. How does screen gaze hinder you from keeping an eye contact with your patient?

I find it hard to keep an eye contact with the patient because I have to look at the screen to see the client's information and some of them usually feel detached.

4. Do you believe this can make the patient feel detached? Please explain.

Yes, it is a serious concern for many patients. Some of them feel that I do not have their interests at heart.

5. How does heavy keyboarding hinder you from communicating effectively with patients?

I usually spend a lot of time entering patient's data in the system, thus affecting the amount of time available to discuss patients' problems.

6. Do you find it easy to respond to your patients' comments or questions when entering data on your computer? Please explain.

Sometimes it is hard to respond to their comments or questions effectively because some questions may bypass me because I pay more attention to the computer. In fact, sometimes I have to request the clients to repeat the questions sine my attention was diverted to keyboard.

7. What is the positioning of the computer you use in the clinical room?

It is directly in front of me and adjacent to clients.

8. How does the position of computer monitor affect how you communicate with your patients?

It does not affect me because it is placed in a manner that allows me to see my patients when communicating with them.

9. Are you satisfied with the use of computer in the clinic room? Please explain.

No. Computers distract us from connecting with our clients and some of them usually feel detached. This makes communication very challenging because some patients may not share critical information very easily because there is no trust.

Physician 3

1. How long have you been working at the hospital?

6 years

2. What is your occupation in the company?

Physician

3. How does screen gaze hinder you from keeping an eye contact with your patient?

I usually find it hard to divide my attention between patients and computer screen. I usually ask them questions while looking at the screen, which lead to some form of disengagement.

4. Do you believe this can make the patient feel detached? Please explain.

Yes, some patients feel detached because they believe that am only paying attention to my computer and not them.

5. How does heavy keyboarding hinder you from communicating effectively with patients?

Heavy keyboarding leads to quiet time in in the room and patients may feel that I am ignoring them hence affecting their trust level.

6. Do you find it easy to respond to your patients' comments or questions when entering data on your computer? Please explain.

This is usually challenging because it becomes hard to listen to the patient attentively while typing the keyboard.

7. What is the positioning of the computer you use in the clinical room?

It is directly in front of my desk, which is opposite where my clients sit.

8. How does the position of computer monitor affect how you communicate with your patients?

It blocks my clients hence making it difficult to see them when engaging them.

9. Are you satisfied with the use of computer in the clinic room? Please explain.

No, because it has some disadvantages especially when it comes to communication. The use of computer makes it difficult to focus my attention on the patients hence affecting how we communicate.

Physician 4

1. How long have you been working at the hospital?

6 years

2. What is your occupation in the company?

Physician

3. How does screen gaze hinder you from keeping an eye contact with your patient?

It shifts my attention away from the patient to the computer and I hardly look at my patients in the eye.

4. Do you believe this can make the patient feel detached? Please explain.

Yes. In most cases, I have to ask my patients one question repeatedly and this makes some of them become uneasy.

5. How does heavy keyboarding hinder you from communicating effectively with patients?

I tend to pay more attention to typing the keyboard than patients, thus making them feel ignored.

6. Do you find it easy to respond to your patients' comments or questions when entering data on your computer? Please explain.

In most instances, some questions may go unanswered because I did not understand them since my attention was

7. What is the positioning of the computer you use in the clinical room?

It is placed in front of my desk

8. How does the position of computer monitor affect how you communicate with your patients?

It blocks me from keeping eye contact with my patients, thus affecting our communication.

9. Are you satisfied with the use of computer in the clinic room? Please explain.

No, because it affects my communication with patients.

Physician 5

1. How long have you been working at the hospital?

1.5 years

2. What is your occupation in the company?

Physician

3. How does screen gaze hinder you from keeping an eye contact with your patient?

I usually avoid too much screen gaze because patients need eye contact to develop trust.

4. Do you believe this can make the patient feel detached? Please explain.

Yes, eye contact and body language are part of building trust

5. How does heavy keyboarding hinder you from communicating effectively with patients?

It does not.

6. Do you find it easy to respond to your patients' comments or questions when entering data on your computer? Please explain.

No. Because it is all smart phone which does not capture the story or history in full

7. What is the positioning of the computer you use in the clinical room?

In front of my desk.

8. How does the position of computer monitor affect how you communicate with your patients?

It can sometimes interfere with eye contact and obstruct the patient's view

9. Are you satisfied with the use of computer in the clinic room? Please explain.

Yes. It ensures availability of patients' medical information.

Appendix C: Interview Records for Patients

Patient 1

1. What is your experience of your doctor's heavy keyboarding during data entry?

I have experienced this but not to a degree that has made me uncomfortable. My doctor will ask me questions with eye contact and record my answers on his/her keyboard.

2. How does heavy keyboarding during data entry affects how your doctor communicate with you?

If the keyboarding is heavier than normal, I will feel as if my doctor has no interest in being personable. This will affect me as a patient if I have no eye contact with my doctor you want to create that small amount of trust in such a little amount of time.

3. Do you find it easy to talk to your doctor when he/she is entering data on his/her computer while gazing at the screen? Please explain

Yes, this does not create any difficulty talking to my doctor because I am confident that he/she is recording my responses and entering them accurately into my chart.

4. What is the positioning of the computer monitor of your doctor?

In front of me but facing the door.

5. How does the position of the computer monitor affect how you communicate with your doctor?

It does not change how I efficiently communicate with my doctor.

6. Are you satisfied with your doctor's use of computer in the clinical room? Please explain.

Yes, I feel after and before the exam is an appropriate time for computer use.

7. What improvements would you recommend helping enhance your communication with physicians during clinical visits?

I would make sure that as much verbal and physical eye contact as possible. Only using the computer before/ after the exam.

Patient 2

1. What is your experience of your doctor's heavy keyboarding during data entry?

I would not say it is a bad experience although my doctor usually spends much time on the keyboard when entering data.

2. How does heavy keyboarding during data entry affects how your doctor communicate with you?

Heavy keyboarding affects the quality of our communication because my doctor dos not even keep an eye contact with me.

3. Do you find it easy to talk to your doctor when he/she is entering data on his/her computer while gazing at the screen? Please explain

Yes, I can easily talk to my doctor when he is entering data on his computer although sometimes, he gazes a lot at the screen which makes me uncomfortable.

4. What does the positioning of the computer monitor of your doctor?

It is adjacent to where I sit

5. How does the position of the computer monitor affect how you communicate with your doctor?

It does not affect how I communicate with my doctor because my doctor is able to keep an eye contact with me.

6. Are you satisfied with your doctor's use of computer in the clinical room? Please explain.

Yes. However, the use of computer sometimes affects my communication with the doctor.

7. What improvements would you recommend helping enhance your communication with physicians during clinical visits?

Physicians should make efforts to keep an eye contact with patients when using computers. They should balance between keeping eye contact with patients and looking at the screen.

Patient 3

1. What is your experience of your doctor's heavy keyboarding during data entry?

It has never been bad although my doctor usually types a lot while asking me questions.

2. How does heavy keyboarding during data entry affects how your doctor communicate with you?

Sometimes I do get upset because I feel that my doctor does not pay attention to me. He types the keyboard without keeping an eye contact with me.

3. Do you find it easy to talk to your doctor when he/she is entering data on his/her computer while gazing at the screen? Please explain

No, the doctor pays much attention to the computer and sometimes I do not ask certain questions because the trust is not there.

4. What does the positioning of the computer monitor of your doctor?

It is placed in a manner that I can be able to see the contents.

5. How does the position of the computer monitor affect how you communicate with your doctor?

It allows me to develop trust in my doctor and I can open up to him.

6. Are you satisfied with your doctor's use of computer in the clinical room? Please explain.

Not that much because I feel like the doctor is not giving me much attention.

7. What improvements would you recommend helping enhance your communication with physicians during clinical visits?

The set-up of the computer, especially monitor should be organized in a way that allows doctors to keep an eye contact with patients.

Patient 4

1. What is your experience of your doctor's heavy keyboarding during data entry?

My doctor usually types the keyboard while asking me questions.

2. How does heavy keyboarding during data entry affects how your doctor communicate with you?

My doctor does not keep an eye contact with me because he concentrates too much on the keyboard and this makes me upset.

3. Do you find it easy to talk to your doctor when he/she is entering data on his/her computer while gazing at the screen? Please explain

No. It is not that easy because she gazes a lot at the computer at my expense and this makes me uncomfortable.

4. What does the positioning of the computer monitor of your doctor?

It is on top of my doctor's table and directly opposite where I sit.

5. How does the position of the computer monitor affect how you communicate with your doctor?

It blocks my doctor from maintaining an eye contact with me.

6. Are you satisfied with your doctor's use of computer in the clinical room? Please explain.

Am not satisfied. I feel like computer distracts my doctor and sometimes fail to give attention hence making me to lose trust.

7. What improvements would you recommend helping enhance your communication with physicians during clinical visits?

Doctors should strike a balance between their patients and computers to help build trust and improve their communication.

Patient 5

1. What is your experience of your doctor's heavy keyboarding during data entry?

I had a bad experience in one of the health facilities. The doctor took 10 minutes typing the keyboard without talking to me. This made me upset, and I had to leave the room because I felt that the doctor did not care about me.

2. How does heavy keyboarding during data entry affects how your doctor communicate with you?

Heavy keyboarding causes disengagement because the doctor pays attention to the computer. She does not even keep an eye contact with me when typing the keyboard.

3. Do you find it easy to talk to your doctor when he/she is entering data on his/her computer while gazing at the screen? Please explain

No, my doctor gazes a lot at the computer and this makes me feel that she does not care about me.

4. What does the positioning of the computer monitor of your doctor?

It is vertically opposite where I sit.

5. How does the position of the computer monitor affect how you communicate with your doctor?

It makes me lose trust in my doctor because I am not able to view the contents of her computer.

6. Are you satisfied with your doctor's use of computer in the clinical room? Please explain.

Not that much. I feel that my doctor does not pay attention to me when using the computer.

7. What improvements would you recommend helping enhance your communication with physicians during clinical visits?

Doctors should pay attention to patients when using computer to avoid feeling detached.