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Factors associated with patient trust in electronic health records used in primary care settings

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Abstract
Objective: This study aimed to identify factors associated with patient trust in electronic health records (EHRs) used in primary care.
Method: A cross-sectional study conducted at five primary care clinics in the Midwestern United States gathered patients' post-visit responses to a validated written survey questionnaire consisting of close-ended questions.
Results: A total of 142 patients responded to the survey. Of the survey respondents, 87.3% reported a positive trust attitude toward EHRs used in their primary care. Bivariate logistic regression analyses found that patient trust in EHRs was associated with the patient having complete trust in the physician, patient perception of characteristics of EHRs, and patient perception of how the physician used the technology.
Conclusions: This study found a generally positive patient attitude toward EHRs used in primary care. The study findings indicate that it is important to provide increased health informatics training to health care providers.

Introduction

Electronic health records (EHRs) represent an area of significant ongoing research interest in the field of health information technology [1-3]. EHRs integrate patient care history from diverse clinical settings into computer-processable files, thereby increasing the accessibility, quantity, and quality of

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patient information available for health care providers to plan and coordinate patient care, document episodes of care, and evaluate outcomes of care [3-10]. Previous research has suggested that EHRs can improve the continuity and outcomes of patient care and lead to cost-savings for health systems [4-10]. Despite these suggested efficacies, adoption of EHRs remains limited across a variety of clinical settings, ranging from primary care practices to specialty practices and from hospital-based settings to outpatient and ambulatory care, and across the United States geographically [9-17]. Most of the published studies investigating EHR adoption have focused on evaluating health care providers' attitudes toward EHRs to identify their barriers to EHR implementation. Commonly reported barriers to EHR adoption include financial constraints, insufficient technical trainings, and difficulties with changing well-established practice patterns [9,10,16-23].

However, as the health care system is shifting from a historically physician-centered model of care to patient-centered care, which requires the health care provider to understand and address patient needs and become patient advocates. It is increasingly important for health care providers to incorporate patients' perspectives into medical decision making [24,25]. Therefore, when it comes to health information technology, negative patient attitudes toward EHRs may contribute to decisions by their health care providers to reject EHR use in clinical practice [26]. Additionally, physicians cannot share patient health information electronically with other health care providers without obtaining patient consent. Furthermore, patients may ultimately become users of EHRs themselves by retrieving, managing, and sharing their online health information, which in theory could lead to enhanced quality of care, improved doctor–patient communications, and reduced cost of care [27]. Therefore, to accelerate adoption and meaningful use of EHRs, it is crucial for health information technology design to understand and incorporate patients' perspectives of EHRs into consideration [8-10].

This study aims to contribute to the understanding of trust in sociotechnical systems by exploring patient trust in EHRs in a technology-mediated collaborative health encounter. A technology-mediated collaborative health encounter represents an interaction between individuals in a health setting that involves a piece of technology [28]. Patient trust in EHRs is critical in such health encounters since whether a patient trust or distrust a technology is related to the patient's interpersonal relationship with the physician [28]. Patient's interpersonal relationship with the physician will ultimately affect an array of variables that are of significant importance to the health care system, such as patient adherence to medical advice, health status, and care seeking behaviors [29].

Hence, this study was undertaken to assess patient trust in EHRs used in their medical care and identify factors associated with patient trust in EHRs. As defined by previous studies, patient trust in a technology is a patient's belief that the technology used in their care will not fail [28]. According to a conceptual model of patients' decision-making process of developing trust in health technology, patients obtain trust in health technology by forming positive perceptions of their health care provider, the characteristics of the technology, and how the care provider uses the technology in patient care [30]. Based on this model, we hypothesized three factors to be determinants of patient trust in EHRs in primary care settings: (1) patient trust in the primary care physician, (2) positive patient perception of features of EHRs, and (3) positive patient perception of how the physician uses EHRs. This study aimed to ascertain whether these hypothesized factors are associated with patient trust in EHRs used in primary care.

Methods

Design and participants

This cross-sectional study was conducted at five primary care clinics in the Midwestern United States where physicians utilized the same EHR system in patient care. A convenient sampling approach was employed. Returning patients to these five clinics aged between 18 and 65 years were invited to respond to a survey. The survey was conducted after obtaining patient informed consent. Each survey respondent received $20 for participating in the study.

Study instrument and procedure

A trained research staff member administered the paper-based survey questionnaire in a private room after the patients had completed their medical visits. The questionnaire was filled out by the patient in most cases; however, for patients with certain physical disabilities, the survey administrator would assist the patient in writing down their responses. To help the survey respondent understand each questionnaire item being evaluated, the survey administrator was present during the entire survey to address questions or concerns the respondent may have. The administrator was trained by the study investigators to provide explanation and clarification regarding the questionnaire items without interfering the patient's perceptions to each item. The survey was based on the Trust in Medical Technology survey instrument [26], which was developed based on results from a qualitative study using semi-structured interviews [30] and has been validated by a previous study [28]. The survey took less than five minutes to complete and consisted of 10 close-ended questions. The dependent variable, patient trust in EHRs, was measured through patients' rating of the statement “I trust the electronic health record”. The survey contained nine questionnaire items that assessed major aspects of the three hypothesized determinants of patient trust in EHRs (For each questionnaire item used in the survey, please refer to the *Results* section (Table 2)). Survey responses were structured using a five-point Likert Scale (i.e. 1=strongly disagree, 5=strongly agree). In addition, the patients' demographic information and average daily computer use time were also collected during the survey.

Data analysis

Statistical analysis was performed using Minitab 16 (Minitab Inc., State College PA). The dependent variable, patient trust in EHRs, as well as nine items assessing various aspects