Journal of Qualitative Research in Health Sciences 2022; 11(1):50-57

http://jqr1.kmu.ac.ir//
10.22062/JQR.2021.195426.1019

Open Access
Publish Free

Original Article

Investigating the Role of Using Electronic Health Record (EHR) in Physician-Patient Relationship: A Qualitative Study

Aref Shayganmehr [1], Gholamreza Malekzadeh [2*], Mariusz Trojanowski [3]

1. Dual Ph.D. student of University of Warsaw, Poland & Ferdowsi University of Mashhad, Iran
2. Associate Professor at Ferdowsi University of Mashhad (FUM), Mashhad, Iran
3. Associate Professor at Warsaw University. Warsaw, Poland

Received: 19.12.2020
Accepted: 19.04.2021
Published online: 20.03.2022

***Corresponding Author:**
Gholamreza Malekzadeh

Email:
malekzadeh@um.ac.ir

Citation:
Shayganmehr A, Malekzadeh Gh, Trojanowski M. Investigating the role of using Electronic Health Record (EHR) in physician-patient relationship: A qualitative study. J Qual Res Health Sci. 2022; 11(1):50-57.

Abstract

Introduction: Electronic Health Record (EHR) is an opportunity to implement healthcare services remotely especially in situations that social distance is necessary, such as in Covid-19 pandemic. The relationship between physician and patient is very important in medicine and it has been described as a basic axis of clinical measures and the foundation stone of proper activities in the health system. However, one of the main factors less considered in the design and deployment of health technologies is the physician-patient relationship, emotions, and feelings. The present study aimed to investigate the role of using electronic health records on physician-patient relationship.

Methods: In this study, qualitative data collection was carried out via unstructured and semi-structured interviews and focus group discussion, using a phenomenological approach. A thematic analysis approach was also used to analyze the transcripts. A total of 24 participants, including eight physicians, three specialists (pediatricians, gynecologists, and psychiatrists), four psychologists, five health care providers, and four chief executive officers were selected using purposive sampling.

Results: The results of this study revealed using EHR could influence interpersonal communication as well as empathetic and sympathetic relationship between physician and patient. The relevant classes are explained in detail in the main text of the article.

Conclusion: While EHR is beneficial, the concerns overshadowing the interactions between physician and patient cause users to change their perception of the benefits and efficiency of EHR.

Keywords: Relationship, Physician-patient, Electronic Health Record (EHR), Healthcare

Introduction

The coronavirus pandemic has led to more demand for remote services and the use of the Internet of Things (IoT) in healthcare services. In the last two decades, there has been considerable progress in information technology, especially in healthcare. Consequently, several kinds of electronic health care records have been designed and implemented (1). Electronic Health Record (EHR) refers to the electronic collection of a Patient's health information from birth to death, recorded, verified and shared by health care providers (2). The main purpose of EHR is to advance the quality of services by reducing medical errors, providing effective communication methods, sharing data among

health service providers, and improving health information management for educational and research purposes (3,4). EHR is one of the most important technologies for improving healthcare services. However, implementing and using EHR is not easy and there are problems to achieve effectiveness. Studies showed that there are challenges to implementing EHR and organizational preparedness and human resource readiness are required. Therefore, technical and non-technical factors should be identified before implementing Electronic Health Record (EHR) and the barriers to implementation must be removed (5). Paper-based data recording does not fulfill the essential needs of data management in the healthcare system due to its essential limitations. Computer information systems started in the mid-1970s and the final goal of these systems has been to achieve electronic health care records (6).

As EHR could impact patient-physician relationship, before implementing EHR, it is essential to pay attention to acceptance readiness (7). Essentially, attitudes towards innovation (awareness), the ability to take on the transfer of technology (skills), and minimizing resistance and supporting efforts (attitudes) are necessary for the successful implementation of the new technology (8). Doctors' resistance is an important barrier to EHR acceptance (9).

The main factors, less considered in the design and deployment of health technologies, are interpersonal communication, emotions, and feelings. Studies show that empathy and emotion are essential for effective health care services. When doctors listen directly to patients, patients feel more relaxed and this leads to better treatment. Moreover, effective communication and empathy between doctor and patient positively affect reducing patient anxiety and depression as well as specific symptoms (10). The relationship between physician and patient is very important in medicine, which has been described as the basic axis of clinical measures and the foundation stone of good activity in the health system (11). In particular, health care personnel will have more useful and effective health care by paying attention to the patient's feelings and symptoms (12).

Some studies showed that using computers in the checkup room is a barrier to the efficiency of the patient -physician relationship and leads to neglecting patients (13, 14, and 15). However, some other studies recommended that EHR technology must be improved in the patient-physician relationship, and some patients are even eager to use EHR (16, 15). Nevertheless, some other studies that examined patients' attitudes toward using computers by a physician have been positive in using her but more studies are needed (14, 17). At this point, this question arises: which factors can affect user-to-user communication (such as doctor or health provider) in using EHR?

Methods

The present study was a qualitative phenomenological one. Data collection was carried out using unstructured and semi-structured interviews and focus group discussion. The qualitative method was utilized since it is problematic to understand technology integration only based on quantitative studies that often focus on the impact of specific and classification-related features. Compared with quantitative studies, qualitative studies could clarify what is happening in the physician-patient relationship, hence enabling researchers to collect detailed, depth information and describe how this information is interrelated (18).

The collected data demonstrated users' perceptions about the impact of the EHR on physician-patient relationships. Qualitative data collection was performed using semi-structured interviews and focus groups to realize users' perceptions about electronic health care information records and identify their specific determinants. Qualitative research aims to "understand and explain beliefs and behaviors in the context in which they occur" and characterize them as "interpretive and realistic". The statistical sample consisted of 24 health providers, including eight physicians, three specialists (a pediatrician, a gynecologist, and a psychiatrist), four nutritionists, five health care providers, and four chief executive officers (CEO) who were selected purposefully. The inclusion criteria were: (1) having experience in using EHR in the health care system for at least 3 years; (2) having clinical experience with patients for at least 3 years; (3) being between 28 to 60 years old; (4) being consent to participate in the study. The exclusion criteria were: (1) dissatisfaction with participation in continued research; (2) lack of proper expression.

One of the challenges in qualitative research is that interviewees may respond more to their own interest and objectives; therefore, they do not provide the researcher the purposeful information

related to the topic. For this purpose, general questions were used in the first interview (19). Randomly, the first, second, and third interviews were conducted by the first author without a clearly defined structure and set of questions. The participants were only asked to talk about their experience with patient care and working with EHR. In qualitative research, unstructured interviews provide wider range of information and allow participants to tell their stories with more detail (20). Then, after analyzing the first and second interviews, according to the concepts extracted in the analysis process, other subsequent interviews were conducted in a semi-structured manner with more probing questions about the physician-patient communication during using electronic health record.

The participants also provided feedback on their patients' experience of using technology and EHR. The interviews were carried out where it was convenient for the participants. At the beginning of the interview, conscious consent, confidentiality, and privacy were ensured. All interviews were recorded and then transcribed verbatim. The interviews lasted between 30 to 90 minutes. To come to a deeper understanding of the influential factors, focus group discussion was used to confirm the data obtained from the interviews. The average session duration was between 15 to 180 minutes, depending on the circumstances. The contents of each focus group discussion (FGD) were converted into text and analyzed.

In this research, the content analysis method was used. Seven steps were taken to collect and analyze the data derived from the interviews as follows: Topic, Design, Interview, Transcription, Analysis, Confirmation, and Report

To ensure the validity of the study, member-checking was used i.e. the interview transcripts were sent back to the participants and they were asked to read them and provide any necessary comments or corrections so as to minimize threats to validity of the study.

Results

The results of the analysis of the interviews and focus group discussion revealed three main categories and nine subcategories with a central theme (Table 1).

Interpersonal communication

Interpersonal communication, emotions, and feelings are one of the main factors affecting the efficiency of health technologies. While dealing with patients is a major part of healthcare services, communicating with them also requires strong interpersonal communication. Interpersonal relationship in health care systems is a social connection or affiliation between two or more people on which EHR can have an impact.

Eye contact

This subcategory is about nonverbal communication, such as body language, facial expressions, eye contact, body posture, and body gestures. Eye contact establishes communication. One notices the emotional state to understand whether his/her audience is happy or sad, alert or distracted, sleepy, restless, or anxious.

"When we enter a doctor's office and the doctor prescribes without looking at us and having eye contact, it is not pleasant for us because then we feel that he/she does not listen and his/her attention is elsewhere" (P12). *"There is a major problem with eye contact: the emotion and trust between the patient and electronic file technology" (P13). "When physicians depend too much on technology, transferring mutual emotions is not taken into consideration"* (P11).

Patient engagement

Many patients may be restless, annoyed, and anxious at the first visit, and the doctor's appropriate behavior will make the patients feel comfortable. Talking about illness creates a common ground between the doctor and the patient and expands the relationship.

Table 1. Categories, subcategories, and central theme

Central theme	Categories	Subcategories
Physician-Patient Relationship	Interpersonal Communication	Eye contact Patient engagement Interpersonal Trust
	Empathetic Relationship	Interpersonal Perception Relieving patient anxiety
	Sympathetic Relationship	Perceiving patient's problems Putting oneself in patient's shoes

"When patients receive feedback, they feel that they have been seen (P4). In a public satisfaction survey, the first thing that mattered was how health providers relate to patients and how much they respect them; for example, by shaking hands, greetings, standing up for respect, etc. When we examine, we see that although they have not received full services, they are fully satisfied" (P4).

Interpersonal Trust

Trust appears in many health studies. In order to understand health care systems and evaluate quality, it is essential to understand a person's trust in the technologies. The doctor-patient relationship plays an important role in health care and patient's trust is a fundamental aspect of that relationship.

"Human-to-human relationships and social communication cannot be compensated for by technology. Technology cannot do the things that a human can. Patients are more comfortable with humans because technologies and electronic services are computerized" (P3). *Patients need psychological and communication support from a trusted doctor or nurse, but technology has problems in this regard. "*(P9).

Empathetic Relationship

This category implies that the doctor or health care provider expresses his or her true concern about the patient's health and pays attention to patient's well-being and accepts it without any judgment. The relevant subcategories are as follows:

Interpersonal perception

Interpersonal skills in physician-patient communication is essential to effective treatment. There are several challenges in effective communication when using EHR. Conceptualization and operationalization of effective communication as an interpersonal and interdependent process between physicians and patients have important consequences.

"The first thing a patient needs when visiting a health center or hospital is to feel comfortable that someone is taking care of him or her. He/she needs psychological and communication support from a trusted doctor or nurse, but technology has problems in this regard" (P9). "*Health services are very much based on the patient's feelings and understanding and are more effective and technology cannot be successful to replace human beings"* (P5).

Relieving patient anxiety

Anxiety can be the source of many problems in healthcare. Anxiety can cause fear, apprehension, nervousness, and concern. It is common for persons to experience a general state of concern or fear when facing a new experience such as new technology, and being involved in a new healthcare technology is no exception. As part of their professional duty, physicians or nurses are required to recognize anxiety in patients and respond empathetically. Moreover, while obtaining valid consent for using technology requires nurses to clarify potential risks, nurses should also attempt to reassure patients of their safety.

"When a patient goes to a doctor's office or health center, he calms down as soon as he talks to a specialist for a few minutes. This is effective in improving and relieving his anxiety" (P10). *"Electronic systems can't be effective in calming people down"* (P3).

Sympathetic Relationship

Perceiving patient's problems

Those physicians or doctors who rely too much on computer data may neglect the psychological symptoms of patients. Examples**:**

"When a patient goes to a health center for a health problem, only doctors or health center providers can understand his/her problem. However, electronic health care record is an obstacle because our focus is on the recommendations and guides provided by the electronic file and the accuracy of the data recording rather than paying attention to the patient" (P4). *"An empathetic relationship is important to me personally, and the doctor must have this skill (P7)".*

Putting oneself in patient's shoes

Health care providers should have the capacity to put themselves in patients' shoes and comprehend what patients are going through. This is demonstrated by more effective and more considerate treatment. For example, when a patient shows symptoms of depression during a consultation, a more empathetic physician or other health care provider might signal these and refer the patient to a therapist, but working with computer and looking at monitor could be a barrier.

"I always try to put myself in place of the patients and consider their problems as my problem, but since I started working with the electronic file, this kind of relationship and feeling has diminished" (P7). *"Electronic health systems and health technologies can never fully understand and touch*

the human problem" (P1). *"As technology does not consider individual differences and does not have human feelings, it cannot understand humans' mental problems"* (P11).

Discussion

The relationship between doctor and patient is a two-way interaction. The impact of EHR on doctor-patient relationship cannot be denied. In this study, these effects were expressed in the form of three main categories including *interpersonal communication, empathetic relationship, and sympathetic relationship*. The main concern of physicians and users of EHR is how to keep interpersonal communication, empathy and sympathy with the patient while using the technology. This challenge causes them to change their perception of the benefits of EHR.

The findings of the present study suggested that using interface technologies such as EHR could affect interpersonal communication between physicians and patients. Interpersonal communication, emotions, and feelings are among the chief factors affecting the efficiency of health technologies. The relationship between physician and patient is very important in medicine, which has been described as the basic axis of clinical measures and the foundation stone of good activity in the health system (11). EHR deployment affects systems, policies, procedures, and interactions between individuals and groups (21). Excessive use of the computer by doctors in health centers creates communication barriers and causes patient dissatisfaction (21). Patients have a greater sense of confidence and being cared for when both physician and patient participate in care. Indeed, estimating emotional needs is an instinctive need not influenced by culture (7).

One of the subcategories of interpersonal communication in this study was eye contact. Nonverbal behavior, especially facial expressions and eye contact, is related to communication context and culture. For example, avoiding eye contact between people can be respectful in some situations and cultures. However, in other cultures, it can lead to disinterest, avoidance, or disrespect (1). When doctors are typing, patients do not want to stop the doctors' working process (22). Doctors may break conversations when they watch information on the computer monitor and patients try to remain silent when they see the doctors are silent so as to avoid interrupting them (23).

The second subcategory of interpersonal communication was patient engagement. Physicians use communication facilitators, such as participation and supportive dialogue, to further engage the patients during the visit (24-26). However, EHR has not anticipated communication facilitation activities for doctors and patients. Some doctors maintain a routine conversation with their specific skills using questions or some short conversations to keep the conversation flow even when communicating with the EHR (22).

The third subcategory of interpersonal communication identified in this study was interpersonal trust. It is the most challenging factor that is affecting new health technology and most of the studies find it as a key factor. To increase interpersonal trust, studies have suggested the doctor can permit the patient to look at the monitor to improve the patient's trust and satisfaction (27). Choosing a proper position while using computers and keeping eye contact can help alongside patient-centered approaches (28).

The findings of this study indicated that using interface technologies such as EHR could affect empathy between physician and patient as a second main category. It concerns the patient's health and well-being, without any judgment (29). Studies show that empathy and emotion are essential in health care services. Establishing effective communication and empathy between doctor and patient has a positive effect on reducing patient anxiety and depression as well as specific symptoms (10).

One of the subcategories of empathy in this study was interpersonal perception that it is perception of the patient's problems and condition. Paying attention to computer instead of patient decreases patient satisfaction (30), effective communication, (31), and sympathy (32). However, some studies underestimate the effect of computers on reducing patient satisfaction (14) and confirm that doctors' use of computers is part of their work (33). Highly skilled doctors anticipate EHR as a source for facilitating doctor-patient communication. However, doctors with low communication skills see computers as a threat to doctor-patient communication (34).

The second subcategory of empathy based on the findings of this study was relieving patients. EHR can cause a greater distraction than the paper record system and leads to neglecting the patient due to paying attention to the computer (35). When doctors listen to patients indirectly, patients feel more relaxed (10). Effective communication and empathy between the doctor and the patient also positively affect reducing the patient's anxiety and depression, which is associated with a

reduction in specific symptoms (10, 36). It also helps to increase the patient's adaptation (37).

The Accreditation Council for Graduate Medical Education (ACGME) has recommended "professionalism" as one of the future physicians' core competencies. In the ACGME project, empathy can be measured and taught as a feature and can be formally incorporated into medical curricula (38). Doctors' reliance on technology for diagnosis and limited interaction with patients may lead to a decrease in empathy through the loss of listening and speaking skills (39).

The findings of the present study demonstrated that using interface technologies such as EHR could affect sympathy between physician and patient as a third main category. One of the subcategories of sympathy was perceiving patient's problems. Differential diagnosis and management are essential for textual understanding, and finally, patient-centered care is essential for providing compassionate care (40, 41). The second subcategory of sympathy detected in this study was putting oneself in patient's shoes. McGin et al. showed that EHR has a negative effect on physician-patient relationships. Their findings showed that users (physicians) of health technology affect and eliminate most of the physical and emotional interactions with the patient, which is unpleasant for both doctors and patients (42). Patient relationship management is a wide-ranging treatment strategy (43). If doctors are concerned about how they communicate with patients while using EHR, their mental perception of the usefulness and ease of using EHR will be negative (44,45). This study was conducted with some limitations. The present study did not fully address some of the key issues including topology, architecture, operating system, and security requirements for EHRs. Moreover, this study did not consider patients' opinions.

Conclusion

Patients should get personal attention from doctors. Desire for interpersonal attachments as a fundamental human need must be taken into account when analyzing the relationship between patients and doctors. Though Technology can play a barrier role in the relationship between patients and doctors, its application in health services is inevitable. Therefore, it is essential to consider the doctor-patient relationship component in designing Electronic Health Record (EHR). The design and implementation of this system should not overshadow the interactions between health providers and patients. When doctors or health providers want to use EHR, they can adopt communication procedures and some techniques for keeping interaction with the patient. For example, explaining the treatment process, showing some EHR information to the patient, or using short conversations or questions like giving feedback and keeping interaction. Future studies should examine what type of EHR content can be used to facilitate communication between physicians and patients.

Acknowledgments

This study has been approved by the Ethics Committee of Ferdowsi University of Mashhad with the code of ethics IR.UM.REC.1398.143. The study is part of a doctoral dissertation. Participants collaborated with researchers with personal satisfaction. The authors sincerely thank all health workers who participated in this research

Conflict of Interest

The authors declared no conflict of interest.

References

1. World Health Organization. Electronic health care record: Manual for developing countries. Manila: WHO Regional Office for the Western Pacific; 2006. https://apps.who.int/iris/handle/10665/207504
2. Ahmadi, M., Rezaei, H., & Shahmoradi, L. Electronic health record: structure, content, and evaluation. Tehran: Jafari Publication; 8002. [In Persian]
3. Miller RH, Sim I. Physicians' use of electronic medical records: barriers and solutions. Health Aff (Millwood). 2004; 23(2):116-26. doi: 10.1377/hlthaff.23.2.116.
4. Valdes I, Kibbe DC, Tolleson G, Kunik ME, Petersen LA. Barriers to proliferation of electronic medical records. Inform Prim Care. 2004; 12(1):3-9. doi: 10.14236/jhi.v12i1.102.
5. Morton ME, Wiedenbeck S. A framework for predicting EHR adoption attitudes: a physician survey. Perspect Health Inf Manag. 2009; 6(Fall):1a. PMID: 20169013; PMCID: PMC2804456.
6. American Health Information Management Association. Embracing the Future: New Times, New Opportunities for Health Information Managers; 2005. Available From: URL: https://library.ahima.org/doc?oid=58258.
7. Lorenzi NM, Riley RT, Blyth AJ, Southon G, Dixon BJ. Antecedents of the people and organizational aspects of

medical informatics: review of the literature. J Am Med Inform Assoc. 1997; 4(2):79-93. doi: 10.1136/jamia.1997.0040079.

8. Backer TE, David SL, Soucy G. Reviewing the behavioral science knowledge base on technology transfer. Introduction. NIDA Res Monogr. 1995; 155:1-20. PMID: 8594449.

9. Pearsaul S. Connections to care: how technology makes information accessible. Journal of AHIMA. 2002; 73(6):28-31.

10. Neumann M, Edelhäuser F, Tauschel D, Fischer MR, Wirtz M, Woopen C, et al. Empathy decline and its reasons: a systematic review of studies with medical students and residents. Acad Med. 2011; 86(8):996-1009. doi: 10.1097/ACM.0b013e318221e615.

11. Lynch DJ, McGrady AV, Nagel RW, Wahl EF. The patient-physician relationship and medical utilization. Prim Care Companion J Clin Psychiatry. 2007; 9(4):266-70. doi: 10.4088/pcc.v09n0403.

12. Van Dulmen AM, Bensing JM. Health promoting effects of the physician-patient encounter. Psychology, Health & Medicine. 2002;7(3):289-300. do: 10.1080/13548500220139421.

13. Gadd CS, Penrod LE. Dichotomy between physicians' and patients' attitudes regarding EMR use during outpatient encounters. Proc AMIA Symp. 2000:275-9. PMID: 11079888.

14. Hsu J, Huang J, Fung V, Robertson N, Jimison H, Frankel R. Health information technology and physician-patient interactions: impact of computers on communication during outpatient primary care visits. J Am Med Inform Assoc. 2005; 12(4):474-80. doi: 10.1197/jamia.M1741.

15. Huber J. Patient acceptance of computerized progress note documentation. In Information technology for the practicing physician. New York, NY: Springer; 2001. P. 114-7.

16. Weiner M, Biondich P. The influence of information technology on patient-physician relationships. J Gen Intern Med. 2006; 21(1):35-9. doi:10.1111/j.15251497.2006.00307.x.

17. Wager KA, Lee FW, Glaser JP. Managing health care information systems: a practical approach for health care executives. USA:. John Wiley & Sons; 2005.

18. Huang F, Teo T, Zhou M. Factors affecting chinese english as a foreign language teachers' technology acceptance: A qualitative study. Journal of Educational Computing Research. 2019; 57(1): 073563311774616. doi: 10.1177/0735633117746168.

19. Hawkins JE. The practical utility and suitability of email interviews in qualitative research. Qualitative Report. 2018;23(2): 493–501. doi: 10.46743/2160-3715/2018.3266.

20. Denzin NK, Lincoln YS. Collecting and interpreting qualitative materials. California: SAGE Publishing; 2008.

21. Baron RJ, Fabens EL, Schiffman M, Wolf E. Electronic health records: just around the corner? Or over the cliff? Ann Intern Med. 2005 Aug 2;143(3):222-6. doi: 10.7326/0003-4819-143-3-200508020-00008.

22. Booth N, Robinson P, Kohannejad J. Identification of high-quality consultation practice in primary care: the effects of computer use on doctor-patient rapport. Inform Prim Care. 2004; 12(2):75-83. doi: 10.14236/jhi.v12i2.111.

23. Gibbings-Isaac D, Iqbal M, Tahir MA, Kumarapeli P, de Lusignan S. The pattern of silent time in the clinical consultation: an observational multichannel video study. Fam Pract. 2012; 29(5):616-21. doi: 10.1093/fampra/cms001.

24. treet RL Jr, Gordon HS, Ward MM, Krupat E, Kravitz RL. Patient participation in medical consultations: why some patients are more involved than others. Med Care. 2005; 43(10):960-9. doi: 10.1097/01.mlr.0000178172.40344.70.

25. Zandbelt LC, Smets EM, Oort FJ, Godfried MH, de Haes HC. Patient participation in the medical specialist encounter: does physicians' patient-centred communication matter? Patient Educ Couns. 2007; 65(3):396-406. doi: 10.1016/j.pec.2006.09.011.

26. Schmid Mast M, Hall JA, Roter DL. Caring and dominance affect participants' perceptions and behaviors during a virtual medical visit. J Gen Intern Med. 2008; 23(5):523-7. doi: 10.1007/s11606-008-0512-5.

27. Pearce C, Arnold M, Phillips C, Trumble S, Dwan K. The patient and the computer in the primary care consultation. J Am Med Inform Assoc. 2011; 18(2):138-42. doi: 10.1136/jamia.2010.006486.

28. Duke P, Frankel RM, Reis S. How to integrate the electronic health record and patient-centered communication into the medical visit: a skills-based approach. Teach Learn Med. 2013; 25(4):358-65. doi: 10.1080/10401334.2013.827981.

29. Van der Merwe JV. Physician-patient communication using ancestral spirits to achieve holistic healing. Am J Obstet Gynecol. 1995; 172(4 Pt 1):1080-7. doi: 10.1016/0002-9378(95)91467-6.

30. Farber NJ, Liu L, Chen Y, Calvitti A, Street RL Jr, Zuest D, et al. EHR use and patient satisfaction: What we learned. J Fam Pract. 2015; 64(11):687-96. PMID: 26697540.

31. Street RL Jr, Liu L, Farber NJ, Chen Y, Calvitti A, Zuest D, et al. Provider interaction with the electronic health record: the effects on patient-centered communication in medical encounters. Patient Educ Couns. 2014; 96(3):315-9. doi: 10.1016/j.pec.2014.05.004.

32. Bensing JM, Kerssens JJ, van der Pasch M. Patient-directed gaze as a tool for discovering and handling psychosocial problems in general practice. J Nonverbal Behav. 1995; 19(4):223-42. doi: 10.1007/BF02173082.

33. Brownbridge G, Herzmark GA, Wall TD. Patient

reactions to doctors' computer use in general practice consultations. Social Science & Medicine. 1985; 20(1): 47-52. doi: 10.1016/0277-9536(85)90310-7.

34. Rouf E, Whittle J, Lu N, Schwartz MD. Computers in the exam room: differences in physician-patient interaction may be due to physician experience. J Gen Intern Med. 2007; 22(1):43-8. doi: 10.1007/s11606-007-0112-9.

35. Rathert C, Mittler JN, Banerjee S, McDaniel J. Patient-centered communication in the era of electronic health records: What does the evidence say? Patient Educ Couns. 2017; 100(1):50-64. doi: 10.1016/j.pec.2016.07.031.

36. Rakel DP, Hoeft TJ, Barrett BP, Chewning BA, Craig BM, Niu M. Practitioner empathy and the duration of the common cold. Fam Med. 2009 ; 41(7):494-501. PMID: 19582635.

37. Kim SS, Kaplowitz S, Johnston MV. The effects of physician empathy on patient satisfaction and compliance. Eval Health Prof. 2004; 27(3):237-51. doi: 10.1177/0163278704267037.

38. Stepien KA, Baernstein A. Educating for empathy. A review. J Gen Intern Med. 2006; 21(5):524-30. doi: 10.1111/j.1525-1497.2006.00443.x.

39. Crandall SJ, Reboussin BA, Michielutte R, Anthony JE, Naughton MJ. Medical students' attitudes toward underserved patients: a longitudinal comparison of problem-based and traditional medical curricula. Adv Health Sci Educ Theory Pract. 2007; 12(1):71-86. doi: 10.1007/s10459-005-2297-1.

40. Epstein RM, Street RL. Patient-centered communication in cancer care: promoting healing and reducing suffering. National Cancer Institute, NIH Publication No. 07-6225, Bethesda; 2007.

41. Shafati M, Zahedi MJ. Physician-patient relationship: ethnography of multiple patient visits at private offices of doctors. J Qual Res Health Sci. 2013; 2:46-61.

42. McGinn CA, Grenier S, Duplantie J, Shaw N, Sicotte C, Mathieu L, et al. Comparison of user groups' perspectives of barriers and facilitators to implementing electronic health records: a systematic review. BMC Med. 2011; 9:46. doi: 10.1186/1741-7015-9-46.

43. Nekoie-Moghadam M, Amiresmaili M, Kardan-moghadam V, Jahani Y, Goharimehr M. Identification of effective dimensions and factors on improving patient relationship management strategy in Kerman city hospitals, Iran: A qualitative study. J Qual Res Health Sci 2020; 6(4):400-13. [In Persian]

44. Morton ME. Use and acceptance of an electronic health record: factors affecting physician attitudes s [dissertation]. USA: Drexel University; 2008.

45. Abdekhoda M, Ahmadi M, Gohari M, Noruzi A. The effects of organizational contextual factors on physicians' attitude toward adoption of Electronic Medical Records. J Biomed Inform. 2015; 53:174-9. doi: 10.1016/j.jbi.2014.10.008.