Patient Perceptions of Electronic Medical Record Use by Doctors in GMC Health Center Clinic

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Abstract

Effective communication between doctor and patient is needed to obtain optimal results for patient recovery. The GMC Health Center clinic applies Electronic Medical Records (EMR) to support comprehensive health services. EMR has a positive impact on doctors but is not so felt by patients. This study aims to analyze patient perceptions of EMR use by doctors in GMC Health Center Clinic. This research is an analytic survey with a cross-sectional design. Sampling by accidental sampling with a total of 91 patients. Research variables include patient perceptions of the use of EMR by doctors and patient satisfaction. Data analysis was carried out in univariate and bivariate with the Pearson Product-Moment correlation test using SPSS Software. The results showed that patients who were satisfied with the use of EMR by doctors mostly had a positive perception of EMR (76.6%). Pearson Product-Moment correlation test showed that there was a significant relationship between patients' perceptions of the use of EMR with patient satisfaction (p-value<α=0.05; r=0.689). The perception of the EMR communication function has a greater correlation with patient satisfaction (72%) than the perception of the clinical function of EMR (48.2%). The conclusion is patients have a positive perception of the use of EMR by doctors and also proven by the high level of patient satisfaction. Doctors should continue to improve communication and focus on patients when using EMR.

Keyword: Electronic Medical Records, Patient, Perception ,

INTRODUCTION

Medical records must be made in writing, complete and clear, or electronically. The use of Electronic Medical Records (EMR) as the main source of information is still rare, but its use is increasing in primary healthcare facilities. Medical professionals need access to the required patient medical files to give their patients the proper treatment. These can be more easily collected from various sources, saved, and easily accessed on Electronic Medical Record (EMR) systems if they are in digital form. If not, there could be significant delays, higher expenses, and, most significantly, potential medical mistakes (Cocosila & Archer, 2017). EMR is viewed as a way to enhance the quality of healthcare by streamlining

workflow, decreasing medical errors, lowering costs and length of stay, boosting revenue, enhancing patient care by strengthening ties between all caregivers, and lowering the need for storage space, supplies, and staff for the retrieval and filing of medical records (Walle et al., 2023). A health service institution, especially officers who serve patients directly, has a very strategic role in dealing with patients, so good communication is an obligation and What must be considered is that patients, as health consumers, have the right to get health services with the convenience of health services (Arlan, 2018). According to Arlan (2018), patient complaints occur due to a lack of communication between health workers and patients.

Information transparency is valued by patients and medical professionals. Nonetheless, there is debate concerning the prompt disclosure of results, particularly among professionals (Leonard et al., 2022). The use of EMR strengthens the physician's ability to complete information tasks but tends to reduce his or her attention to patient-centered aspects of patient communication, including outlining the patient's agenda and exploring psychosocial and emotional issues. The study by AlOtaib & AlSaedi (2022) shows the majority of significant variables that may influence the adoption of the EMR are viewed favorably by doctors. Additionally, most doctors needed to be provided with official training on the EMR. Physicians' sources of information about the electronic medical record and their perceptions of this technology are significantly correlated, with the better perception being linked with formal training.

Electronic health records are now the norm in United State Healthcare. Bidirectional patient portals allow frequent communication between patients and their healthcare team. Many studies have examined the importance of patient engagement and trust between patients and their healthcare team, typically in face-to-face interactions. Little is known about how electronic communications build or enhance patient trust and engagement (Moore, Chavez, & Fisher, 2022). EMR were implemented in most health organizations in several countries in order to improve the quality of health, enhance patients' safety and improve efficiency. Nevertheless, physicians' and nurses' perceptions regarding the ease of use and usability of EMR are generally very low (Ologeanu-Taddei, Morquin, & Vitari, 2016).

Bardach, Real, & Bardach (2017) examined EMR use and interprofessional communication in a hospital setting. Separate approaches by different professions to using EMRs and technical limitations served as barriers to effective and timely communication. Physicians were more likely to use multiple communication channels, mainly face-to-face, when addressing the perceived weakness in EMRs. Shortcomings in technology included

limited computer availability, complexity in entering or retrieving documentation, sluggish sign-in processes, and other problems with the ongoing implementation of EMRs

The research by Gagnon *et al.* (2016) concluded that organizational characteristics were not significantly related to physicians' intention to use Electronic Health Records (EHR). This intention was largely influenced by physicians' perception that the EHR was easy to use, had tangible benefits, and was consistent with professional and social norms. However, organizations can support the adoption and use of EHR by establishing a policy for physicians to participate in the EHR implementation process.

Many doctors cannot make eye contact with patients when looking at their computer monitors, this does not show that the duration of staring at the computer is inversely proportional to the average time of doctor centering on the patient and doctor's eye contact. There is an assumption that switching eye contact is often interpreted by patients as a sign of disinterest or unwillingness to interact with the doctor. As a health service institution, especially officers who directly serve patients, have a very strategic role in dealing with patients, so good communication is an obligation. It must be noted that patients as consumers of health have the right to obtain health services at their convenience of health services. Patient complaints occur due to a lack of communication between health workers and patients (W. W. Lee et al., 2016).

The results of the study by Rathert *et al.* (2017) show that the use of an EHR facilitates the storage and sharing of certain medical information. However, it may interfere with the collection of psychosocial and emotional information and therefore may interfere with supportive relationships in the patient's healing. Patient access to a functioning EHR can improve communication, patient empowerment, engagement, and self-management. The use of EHR has an impact on the communication function and its influence on patient outcomes to achieve patient-centered care.

Effective communication between doctors and patients is one of the most important competencies and must be mastered by doctors. Communication competence determines success in helping to solve patients' health problems. Effective communication can reduce patient doubts, and increase patient compliance. Patients feel safe and protected if the doctors who treat them do what is best for their patients. When connected, the doctor can understand and react better to changes in behavior and concern for the patient over time. Effective communication between doctors and patients is needed to obtain optimal results, in the form of health problems that can be resolved and patient recovery.

The factors that influence the perception of service quality in hospitals related to the interaction of doctors or other officers include professional skills, patient beliefs, interactive communication, images and antithesis performance. A person's view or perception of a health service is formed after observations, whether in the form of direct experience as a patient or through information obtained through the mass media or people who have been patients or families of patients at the health service facility. The perceptions formed will be followed by the formation of attitudes, then attitudes will be followed by actions towards health services if needed (W. W. Lee et al., 2016). Based on research by Rosyada, Lazuardi, & Kusrini, (2017) at Panti Rapih Hospital in Yogyakarta, EMR helps manage hospital service. EMR mechanism in managing patient clinical services to review medical history data in real-time, easily exchange information and communication between healthcare professionals and support clinical decision-making. In addition, the hospital views energy efficiency used to do work. Doctors also need to make clinical decisions more quickly because information on past patient histories is already available, both those who perform services with the same doctor and other doctors who provide services to these patients.

Universitas Gadjah Mada (UGM) has facilities and health support facilities for the entire UGM academic community that are not for profit. By its mission, GMC Health Center Clinic provides comprehensive health services including health promotion and disease prevention as well as treatment for students and other participants. To support comprehensive health services, the GMC Health Center Clinic has implemented electronic medical records since it was first established in 2001. The Institute of Medicine (IOM) describes electronic medical records as a system that can make it easier to store patient clinical data or information, and enter data

METHODS

The type of research used is analytical survey research. Analytical survey research is research that explores how and why a health phenomenon occurs by analyzing the dynamics of the correlation between risk factors and effect factors (Notoatmodjo, 2014).

The population in this study were all long outpatients at the GMC Health Center Clinic. The sample in this study was an old patient with the status of a student who was being treated at the GMC Health Center Clinic when data collection was carried out. The number of samples in this study was calculated using the Solvin technique as follows:

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{70.000}{1 + 70.000(0,11)^2} = \frac{70.000}{1 + 70.000(0,0121)} = \frac{70.000}{1 + 847}$$

$$n = 82,55$$

n = sample, N = Population, e = estimated error rate (11%)

According to the slovin calculation technique, a sample of 82.55 patients was produced, but the researchers took 91 people. The sample in this study was an old patient with a student status who received treatment at the GMC Health Center Clinic when data was collected. Sampling used non-probability sampling by accidental sampling, namely taking respondents who happened to be at the research location according to the research context (Notoatmodjo, 2014).

The research variables include independent variables, namely patient perceptions of the use of electronic medical records by doctors with sub-variables of EMR clinical function (clinical care, documentation, access to information and educational resources) and communication function (patient involvement and physical focus) while the dependent variable is patient satisfaction.
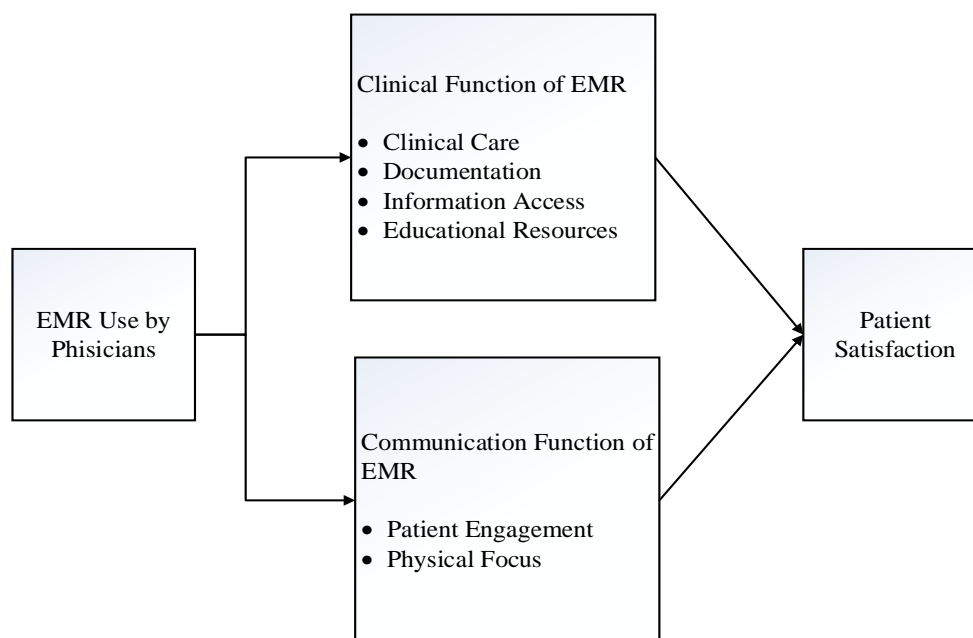

Figure 1. *A Framework of Patient Perceptions of Electronic Medical record Use by Faculty and Resident Physicians: A Mixed-methods Study* (W. W. Lee et al., 2016)

Data was collected using a questionnaire containing 20 statements about patient perceptions and 10 questions about patient satisfaction with using EMR by doctors during the service process. The answers to statements on the questionnaire used a Likert scale with an answer score of 1-5, which had been tested for validity and reliability. Validity measurement is done by calculating the correlation between the question items' scores and the items' total scores. Then compare the value of the r count with the r table for the degree of freedom (df) = n-2 and α = 0.05. The validity testing criteria are valid if r count > r table and invalid if r count < r table. The reliability test was carried out by measuring only once and then the correlation between the answers to questions with the Cronbach Alpha test. The research instrument is said to be reliable if it has a Cronbach alpha coefficient of at least 0.60 (Sulistyanto, 2014).

Data analysis was carried out using univariate and bivariate analysis using SPSS Software. Univariate analysis was carried out to describe the variables and sub-variables of the study by making statistical distribution tables, frequency distributions and cross-tabulations. In the cross-tabulation presentation, the total score of perception and satisfaction variables is categorized based on the average total score of answers into two types of statements. The patient perception variable is categorized into positive perception and negative perception, while the satisfaction variable is categorized into satisfied and dissatisfied. Bivariate analysis used the Pearson Product-Moment correlation test with a 95% confidence level to analyze the relationship between perceptions and patient satisfaction with the use of electronic medical records by doctors.

RESULTS

Respondents in this study amounted to 91 long outpatient patients who were students at the GMC Health Center Clinic. The characteristics of the respondents in this study are presented in Tables 2 and 3.

Table 1. Frequency Distribution of Respondent's Characteristics (n=91)

Characteristics of Respondents	n	%
Gender		
Male	24	26.4
Female	67	73.6
Age (years)		
≤ 20	53	58.2
> 20	38	41.8

In table 1 it can be seen that the majority of respondents are female, with 67 respondents (73.6%). The majority of respondents belonged to the age category < 20 years, with as many as 53 respondents (58.2%).

Table 2. Cross-tabulation of Patient Perception and Satisfaction on the Use of EMR by Doctors (n=91)

| Patient perception | Patient Satisfaction | | | | Total | |
| | Satisfied | | Not Satisfied | | | |
	n	%	n	%	n	%
Positive	36	76.6	11	23.4	47	100
Negative	12	27.3	32	72.7	44	100
Total	48	52.7	43	47.3	91	100

Based on table 2, it can be seen that most satisfied patients have positive perceptions of the use of EMR by doctors (76.6%) while dissatisfied patients mostly have negative perceptions (72.7%).

The relationship between perception and patient satisfaction on the use of electronic medical records by doctors during the service process was analyzed using the Pearson Product-Moment correlation test with a significance level of 95% ($\alpha = 0.05$). The research data were still analyzed by parametric test even though sub-variables were found that were not normally distributed. This is based on the assumption that the number of samples is large (>30), namely 91 respondents.

Table 3. Cross-tabulation of Patient Perception and Satisfaction on the Use of EMR by Doctors

| Variable | Patient Satisfaction | |
	R	p-value
Patient Perception	0.689	0.001
Clinical Function	0.482	0.001
Clinical Care	0.431	0.001
Documentation	0.272	0.009
Access Information	0.255	0.015
Source of Education	0.324	0.002
Communication Function	0.720	0.001
Patient Involvement	0.598	0.001
Physical Focus	0.673	0.001

Based on the correlation test in Table 3, it was found that the significance value of the variables and sub-variables of patient perception on the use of EMR by doctors (p-value < = 0.05) means that there is a significant correlation between patient perceptions of the use of electronic medical records by doctors and patient satisfaction in GMC Health Center Clinic.

The correlation between patient perceptions of the use of electronic medical records by doctors and patient satisfaction is r = 0.689, meaning that there is a strong relationship of 68.9% between perceptions of using electronic medical records by doctors and patient satisfaction. This correlation has a positive value which means the relationship is unidirectional, meaning that the more doctors use electronic medical records, the more patient satisfaction with the use of EMR during the service process doctors increases.

Table 3 also shows that the perception of the EMR communication function has a greater correlation with patient satisfaction (72%) than the perception of the EMR clinical function (48.2%). This shows that patient satisfaction can be described as 72% of the EMR communication function. The greatest correlation of EMR clinical function with patient satisfaction was described in the clinical care sub-variable (43.2%). Meanwhile, the greatest correlation between the EMR communication function and patient satisfaction is described in the physical focus sub-variable (67.3%).

DISCUSSION

The use of electronic health records (EHR) has become commonplace, changing how doctors interact with their patients (Boonstra, Vos, & Rosenberg, 2021). Healthcare organizations around the country have installed electronic medical record (EMR) systems to make it easier to contemporaneously collect patient data, assist inter- and intra-disciplinary team communication, and support clinical decision-making (Jedwab, Manias, Hutchinson, Dobroff, & Redley, 2022).. Implementing an electronic health record (EHR) is advised in order to enhance patient care through information accessibility. Physicians and nurses are key players in the effective adoption of the HER. Healthcare professionals benefit from having patients' electronic medical records available, but there are a few important points to remember when using eHealth software. The autonomy, beneficence, justice, privacy, and fidelity of patients are some of the ethical considerations of electronic medical records (Afzal & Arshad, 2021).

These results are following the research conducted by Lee *et al.* (2016) that 90% of patients stated that overall patients were satisfied with the use of EMR by doctors in the clinic room. Research by Uwambaye *et al.* (2017) also proves that as many as 80% of participants are satisfied with the use of EMR. In addition, Hsu *et al.* (2005) proved positive findings when assessing patient satisfaction two months before EMR implementation, one month and seven months after EMR implementation. Overall patient satisfaction with visits increased

seven months after the introduction of the computer. Medical professionals need access to the required patient medical files in order to give their patients the proper care. They can be more easily collected from many sources, maintained, and conveniently retrieved on EMR systems if they are in digital form. If not, there could be substantial delays, higher expenses, and most critically, potential medical mistakes (Cocosila & Archer, 2017).

Furthermore, in a systematic review, six studies found that the use of EHR by doctors had a positive or neutral effect on patient satisfaction. Only one study found a negative effect of using EHR by doctors on patient satisfaction (Irani, Middleton, Marfatia, & Omana, 2009). The systematic review research from (Liu, Luo, Zhang, & Huang, 2013) also concludes that some studies showed positive patient satisfaction with EMR/EHR. More research is needed to understand these factors to help researchers develop adequate evaluation satisfaction.

Based on the results, patient involvement and physical focus which are sub-variables of perception of the use of EMR by doctors based on the communication function significantly affect patient satisfaction. This shows that the use of EMR by doctors supports communication and interaction between doctors and patients so that patients feel satisfied with the use of EMR when doctors provide examination services to patients. These results are following the research of Wali, Alqahtani, Alharazi, Bukhari, & Quqandi (2020) who found the implementation of EMR improved overall patient satisfaction, especially during a clinical consultation, with the physician being more available to discuss health topics and having more time to listen to the patient's complaints and discuss test results and medication. In addition, implementing the EMR improved the quality of services outside the clinic, such as booking appointments, the prescription process, and the referral system. The use of EMR by doctors can affect the way doctors communicate with their patients. Doctors who have good skills in using computers can save time using computers, so doctors can focus on serving patients and not only face the computer screen so that patients feel unnoticed.

A strong doctor-patient relationship is based on open, two-way communication where the doctor may impart his or her clinical knowledge and the patient can openly express any worries or expectations (Y. K. Lee et al., 2022). Most of the patients' attitudes about using EMR online access were very positive. Patients are satisfied with their complete and accurate medical information. A small number of patients are slightly concerned about the confidentiality and privacy of their electronic medical record information. Doctors are less positive about using electronic communication with patients. This study is also following the research of Alkureishi et al. (2016) which proves that the patient's perception of the use of EMR by doctors does not affect patient satisfaction or communication between patients and

doctors. Therefore, these findings encourage the adoption of EMR as a communication tool. Further research is needed to better understand how to improve communication between patients and doctors using EMR. Such research should link observed physician behavior with patient satisfaction, focus on training physician communication skills, and explore experiences related to EMR use.

Godoy and Soares (2017) stated that the level of patient satisfaction with patient care was not changed before or after the implementation of the EHR. Patients do not seem to notice much difference in the quality of the consultation done using paper or HER and found resident physicians use the EHR more satisfied than older physicians. The resident doctor had a more positive outlook than assistants prior to EHR implementation. This expectation is lower after implementation.

EMR use can improve patient understanding of conditions and treatment plans and increase sharing and confirmation of medical information. Several studies identify behaviors that facilitate patient-centered communication. Future work should adopt these best practices into a curriculum to teach providers how to integrate patient-centered EMR use into their clinical workflow. Medical education targeting to help foster humanistic between patients and doctors with EMR interactions in the digital age (Alkureishi et al., 2016).

CONCLUSIONS

The conclusions in this study are Patients at the GMC Health Center clinic who were satisfied with the use of EMR by doctors mostly had a positive perception of EMR (76.6%). The results of the Pearson Product-Moment correlation test showed that there was a significant relationship between patient perceptions of the use of electronic medical records and patient satisfaction (p-value < =0.05). Large correlation r = 0.689 means that there is a strong relationship of 68.9% between perceptions and patient satisfaction on the use of electronic medical records by doctors. The perception of the EMR communication function has a greater correlation with patient satisfaction (72%) than the perception of the EMR clinical function (48.2%).

Based on the conclusion of the study, it is suggested that doctors should be able to divide their focus between seeing patients and EMR. The strategy that can be done to increase patient satisfaction is to improve the communication and focus of doctors with patients, although doctors also have to operate EMR during the patient examination process. This research can be continued using qualitative techniques with interviews with patients to obtain more in-depth results.

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