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Are Electronic Health Records Beneficial or Not?

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ABSTRACT

There are numerous studies in the literature assessing the effect of Electronic Health Records (EHRs) on health institutions. Some found that EHRs improve quality, service delivery, and satisfaction, while others claim that EHRs are not helpful in these matters. The conceptual ambiguity in the literature regarding EHRs directly affects research results and might misinterpret those results. The purpose of this study is to examine the literature assessing the effect of EHRs on health care quality in terms of EHRs and related concepts. A comprehensive review was conducted of 702 articles on EHRs published between January 2000 and January 2021 and drawn from the Web of Science. The literature showed that 59.26% of the studies addressing the benefits of EHRs are not directly related to EHRs, but rather to EHR functions. Only 1.28% of all studies found in the search dealt with the benefits of EHRs, such as the ease of access provided by EHRs, a natural advantage of EHRs. This study provides valuable information to make more informed decisions about the definition and use of EHR-related concepts and removes the conceptual ambiguity regarding the benefits of EHRs.

Keywords: Benefit, Electronic Health Records, Electronic Health Record Functions, Medical Informatics, Systematic Review

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INTRODUCTION

Information Technology (IT) in healthcare has increased data volume and enabled data to be stored in a digital environment. Patient health data are kept electronically in patient-based Electronic Health Records (EHRs). Electronic Health Records (EHRs) are among the most advanced tools used in the healthcare industry (Sadoughi, Khodaveisi, and Ahmadi 2019. According to the ISO definition, EHRs are data repositories that can be safely stored and changed in a digital form, and they are accessible by more than one authorized user. EHRs contain retrospective, simultaneous, and prospective information. The primary purpose of EHRs is to provide support for the continuous, efficient, and high-quality provision of health care (Häyrinen et al., 2008)..

EHRs are used to describe practices to direct and process any kind of information contained in electronic systems for the provision of health-related services to a person. A hospital with an EHR is expected to have a better performance. However, in this article the functions of the EHR are being explained, not the EHR itself. EHRs alone are not enough to improve health care delivery and health care quality. EHRs can provide this benefit because of their functions. Based on this, there are examples of some information systems that can impact the improvement of health care and can be considered to be EHRs. For example, electronic orders can be given and reproduced within EHRs. In addition, electronic alerts, clinical decision support systems, and electronic capturing of clinical data can improve health care quality (Lin, et al., 2018).

A study conducted by Linder et al.(2007) examined whether EHR use directly relates to healthcare quality or not . To measure this, 14 out of 17 quality indicators used in outpatient care were utilized. According to the study, no significant difference was found in terms of performance between visits with and without EHR. Poon et al.(2010)'s study showed that higher performance is also achieved when primary care physicians use certain EHR features in certain quality criteria. The impact of EHRs on cost and health care quality was evaluated in Welch et al.(2007)'s study, where they explored the effect of using EHRs for hypertension and hyperlipidemia, diabetes, and coronary artery disease as a measure of quality. They found out that it has a slightly positive effect on hypertension and hyperlipidemia and no significant effect on diabetes and coronary artery disease. Furthermore, in terms of cost, the use of EHRs had

no measurable effect on the short-term cost per department.

All these studies indicate that there is a conceptual confusion regarding EHRs. The concepts and information systems that we frequently encounter in studies on EHR are:

Clinical Decision Support System: CDSS is defined as software designed to assist physicians in clinical decision-making directly. Here, patient-specific characteristics of the patient are matched with a computerized clinical knowledge base. Then, the physician is presented with patient-specific evaluations or recommendations for the physician to decide (Sim et al., 2001).

Computerized Physician Order Entry: CPOE is defined as an electronic application used by physicians to order prescriptions, diagnostic tests, and consultations (Wolfstadt et al., 2008).

Electronic Patient Record: There is no universal definition in the literature (Jensen and Aanestad, 2007), but it is generally defined as a Computerized Recording System (Uslu and Stausberg, 2008).

Electronic Medical Record: EMRs are defined as a computerized system in which physicians record information such as patient information, medical histories, consultation notes, patient complaints, allergies, vaccines, vital signs, and prescriptions (Raymond et al.,2015).

Closed-Loop Medication Administration: CLMA is a system applied with automatic identification technologies such as RFID or barcode. It is applied with five right rules (right patient, right medicine, right dose, right route of administration, and right time). It is based on the application of patient identification, and the product is used bedside with cross-checking via RFID or a barcode reader *(Hwang et al., 2007).*

Electronic Medication Administration Record: EMAR helps nurses review drug administration, drug order and document information about drugs with the five right rules (right patient, right medication, right dose, right route, and right time) (Moreland et al., 2012).

Meaningful Use of Electronic Health Record: EHRs have essential potential to improve patient care, increase quality, provide data, and improve coding accuracy. This potential also shows the importance of EHR implementation. Hence, using EHRs by entering the correct data increases the quality and reliability of the obtained data and provides the opportunity to make improvement. Incorrect

data entry reduces the accuracy and reliability of the data obtained from EHRs *(A. Van Winkle et al., 2009)*.

HiTech ATC: HITECH is a financial incentive for physicians and hospitals to use EHRs in ways expected to increase the safety, effectiveness, and efficiency of care known as a meaningful use criteria (Adler-Milstein et al., 2015).

These concepts describe functions related to EHRs. However, when the studies on EHR are examined, it is found that the advantages and disadvantages of the concepts described above are discussed. Still, the EHR is mentioned as the main subject. It seems that the researchers who talked about the benefits and positive effects of the EHR on health care discuss the benefits and positive aspects of the EHR functions.

The conceptual ambiguity in the literature regarding EHRs directly affects the research results and leads to misinterpretation. In this study, to eliminate this conceptual confusion, a detailed review of EHR-related literature was conducted on the Web of Science. A comprehensive review of 702 articles between January 2000 and January 2021 was conducted.

The purpose of this study is to examine the studies in the literature that deals with the effect of EHRs on health care quality and evaluate EHRs and related concepts in terms of their effects on health care quality. Findings and conclusions are included in the ongoing parts of the study.

RESEARCH METHODOLOGY

This study uses the Preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA) method to eliminate the conceptual ambiguity related to EHRs and reveal that the studies related to the usefulness of EHRs are related to the functions of EHRs, a comprehensive review of all relevant articles was done by focusing on well-defined research questions. Applying the PRISMA methodology in this study; three stages were followed: literature review, search strategy, and article selection. Due to the use of the Prisma method, a literature review was made on a single database. Using a single database is one of the limitations of the study.

Ethical approval is not required as the study is “review”.

Literature Search

This research aims to examine the literature on the effect of EHRs and related concepts on health care quality. Therefore, inclusion and exclusion criteria for studies were determined first to do a comprehensive literature review. Studies outside the scope of the study were excluded. Web of Science was searched between January 2000 and January 2021 to provide a comprehensive bibliography of relevant research articles. This study includes articles written/ studied in all languages regarding EHRs between the specified dates. Other types of articles such as systematic reviews, books and e-books, standards, meta-analysis, narrative review, letters to the editor, and sectoral studies were excluded. The focus of this study is studies that address the benefits of EHRs.

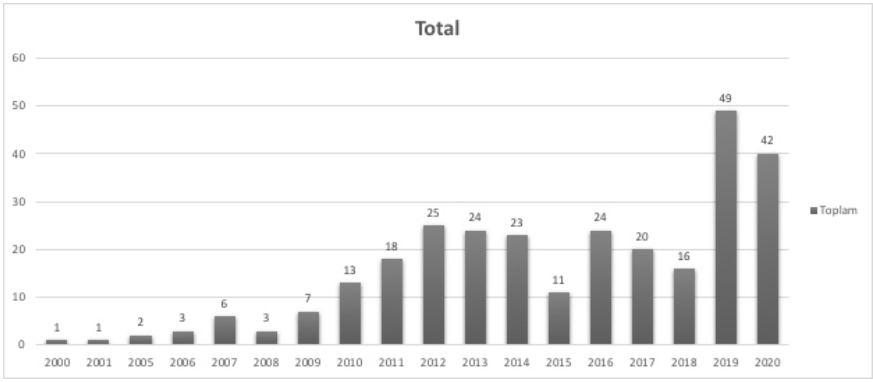

Figure 1: Distribution of Selected Studies by Year (January 2000- January 2021)

In the distribution by years, similar annual studies on EHRs were conducted between 2011-2018. The year with the most work is 2019. The number of publications published in 2020 seems close to the number of publications made in 2019.

Searching Strategy

A searching strategy was determined to do a comprehensive search and not to miss related studies at the same time. First, keywords suitable for the research methodology of the study were determined. These keywords were defined as "EHR, Electronic Health Record, Benefit". In this stage, essential topics such as Health Care Science, Medical Informatics, Computer Science,

etc., were considered to search these databases. In addition, an asterisk (*) was added to the end of the terms to find synonyms associated with these terms, and the search was performed by placing quotation marks around the words to make sure that search engines recognized the full term.

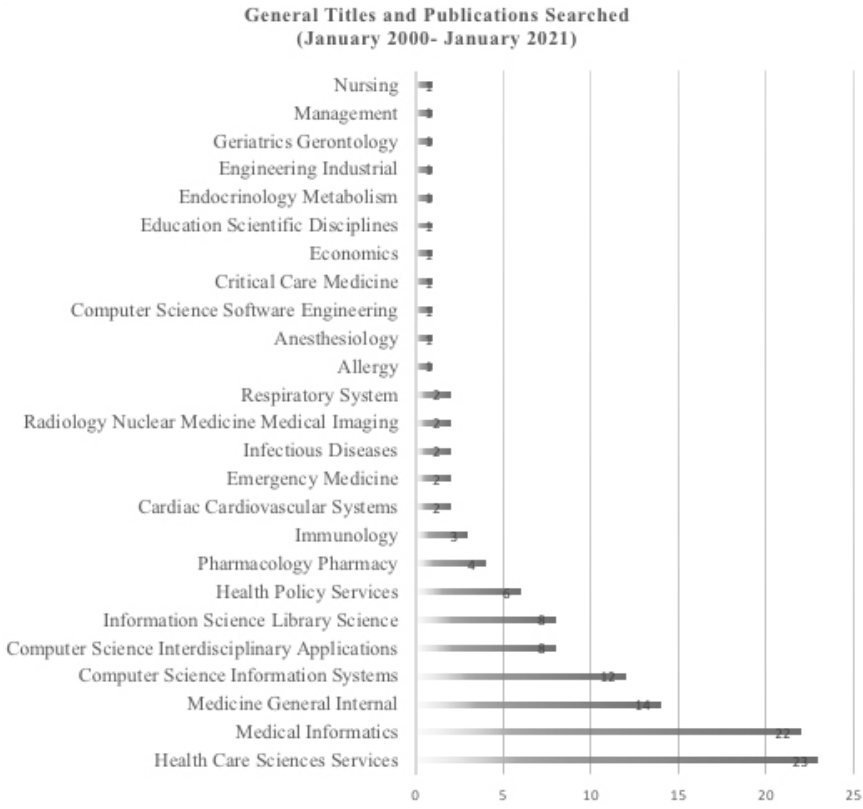

Figure 2: General Titles and Numbers of Publications Searched between 2000-2020

A total of 702 studies were found, but 64 publications related to EHRs were included in the study after the screening and selection process. This shows 121 publications because some publications appear under more than one title (Figure 2). Based on the screening results, studies on EHRs seem to focus on Health Care Sciences Services, Medical Informatics, Internal Medicine, Computer Science Information System, Computer Science Interdisciplinary Applications, and Information Science Library Science. Studies conducted under these headings constitute 2.95% of the total work done. It seems that the title with the most studies is “Health Care Services (23)”.

Selection of Article

To select articles, first of all, eliminating the publications that deal with EHRs and EHR functions was determined as a strategy. Then, the determined keywords (EHR, Electronic Health Record, Benefit) and the basic titles given in (Figure 2) were searched. Then, three stages were followed depending on this screening. These stages are shown in (Figure-3). In the first stage, the searched articles were screened according to their titles. In the second stage, the remaining articles were evaluated based on their abstracts. Finally, the full texts of the remaining articles were reviewed. Based on the purpose of the research and the research question, all articles were reviewed so that irrelevant articles were not included. Initially, a comprehensive review of 702 articles was conducted. Each article was examined according to the concepts used and measured results, and at the last stage, 286 articles were determined. Nine studies directly addressing the EHR and 55 studies addressing the functions of the EHR were found.

Figure 3: Flow diagram of the article selection process

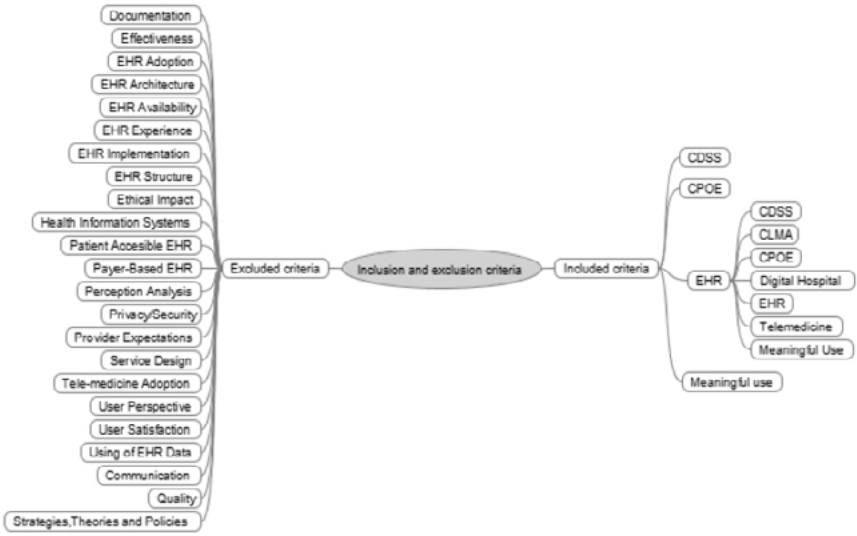

Figure 4: Search Strategy and Include/Exclude Criteria

Inclusion and exclusion criteria were determined for 286 publications due to the initial search after the first title-based screening. These criteria are given in (Figure 4). The inclusion criteria for the publications are that the main subject or the subject they put forward is related to EHRs and EHR functions. EHR functions are specified as CDSS, CPOE, EHR, and Meaningful Use. Exclusion criteria are that the main subject and the issue raised are not directly related to EHRs or EHR functions. A direct relationship was not found with the EHR or EHR functions of 416 studies obtained by using these criteria. For this reason, these studies were not included in the scope of the research. After this screening, 286 studies were evaluated according to their titles, and 64 studies directly related to the purpose of the literature review were included in the study.

RESULTS

A total of 64 studies directly related to EHRs and EHR functions were evaluated in terms of their main subject, the subject they put forward, and their outputs. There are detailed tables regarding these evaluations in the findings section. In addition, the names of the publications and the number of publications on the relevant subject are also included. The framework of the study is the functions of the EHR. Therefore, only the components of the EHR are included in the tables.

Table 1: Include Status of Publications with CDSS as the Main Subject

Main Subject	Highlighted Subject	Outcomes	Total Number
CDSS	CDSS	Adoption of CDSS	3
		Cost Efficiency, False Positive Rate (+)	1
		Designing a CDSS (Optimize antimicrobial prescribing for uncomplicated UTIs)	1
		Increase in the appropriateness of orders	1
		Interactive Provider Alerts (+)	1
		Medication Management	1
		Predictive Analysis	2
		Primary Palliative Care Quality, Integration of CDSS	1
		Usage of Template	1
	Telemedicine	Collection and Storage of EHR Data	1
Total			**13**

A total of 13 publications with CDSS as the main subject was obtained. Although the main subject of one of these publications is CDSS, the subject it put forward is Telemedicine. The title with the most output seems to be Predictive Analysis. As can be understood here, CDSS is a function used within the scope of EHRs. It is not directly related to EHRs. These studies conducted within the scope of CDSS evaluate CDSS as a function of EHR.

Table 2: Include Status of Publications with CPOE as the Main Subject

Main Subject	Highlighted Subject	Outcomes	Total Number
CPOE	CPOE	Drug Safety, Medication Errors (+)	1
		Effectiveness	1
		Increased Indication Quality	1
		Medication Errors (+)	1
Total			**4**

A total of four publications with CPOE as the main subject was obtained. The subject that each of these publications also put forward is CPOE. However, the outputs obtained from the publications are different from each other. The title with the most output appears to be Medication Errors. CPOE is a function used under EHRs. Publications about CPOE address CPOE as a function of EHRs, not EHRs.

Table 3: Include Status of Publications Addressing CDSS, Main Subject of which is EHR

Main Subject	Highlighted Subject	Outcomes	Total Number
EHR	CDSS	Adoption of EHR	1
		CDSS Data Integration Decrease time for anamnesis (+)	1
		Designing a CDSS (Chronic Pain Treatment Tracker)	1
		Developing an EHR order set, Patient Care (+)	1
		Drug Safety (+)	2
		EHR-based CDSS algorithm-software	1
		Follow-up Time (+), Prediction Analyses(+),	1
		Increase in precision medicine research (+)	1
		Integration of Laboratory Data	1
		Patient Care Quality (+)	1
		Patient Care Quality (+)	1
		Predictive Analysis	5
		Usage of EHR	1
		Structuring and/or coding patient history	1
		Drug Safety, Medication Errors	1
Total			**24**

A total of 21 publications had the main subject of EHR but a focus on CDSS. In these publications, the existence or non-existence of EHR benefits is mentioned. However, the article put forward in the publications is CDSS,

which is a function of EHRs. As a result of the studies, the title with the most output is Predictive Analysis. This situation shows that the publications made mention the benefits of CDSS.

Table 4: Include Status of Publications Addressing CLMA, Main Subject of which is EHR

Main Subject	Highlighted Subject	Outcomes	Total Number
EHR	CLMA	Decrease in medication error (+), Predictive Analysis	1
		EHR Integration	1
		Predictive Analysis	1
		Prescribing Medications (+)	1
Total			**4**

Four publications had a primary subject of EHRs, but a focus on CLMA was obtained. In these publications, the existence or non-existence of EHR benefits is mentioned. However, the article put forward in the publications is CLMA, which is a function of EHRs. As a result of the studies, it seems that the title with the most output is Predictive Analysis. This situation shows that the publications made mention the benefits of CLMA.

Table 5: Include Status of Publications Addressing CPOE, Main Subject of which is EHR

Main Subject	Highlighted Subject	Outcomes	Total Number
EHR	CPOE	Decrease Medication Errors (+)	1
		Increase in lab orders (-)	1
		Medication Management	1
		Process innovation	1
		Safety, hospitalization (+), cost of care (+)	1
		Usability of structured templates by comparing data entry times, User Experience	1
Total			**6**

A total of six publications had the main subject of EHR but a focus on CPOE. In these publications, the existence or non-existence of EHR benefits is mentioned. However, the article put forward in the publications is CPOE, which is a function of EHRs. Based on the studies, it seems that outputs were obtained under more than one heading. This situation shows that the publications made mention the benefits of CPOE.

Table 6: Include Status of Publications Addressing Digital Hospital, Main Subject of which is EHR

Main Subject	Highlighted Subject	Outcomes	Total Number
EHR	Digital Hospital	Adoption of EHR	2
		Clinical Workflow Researches (+), Designing EHR Systems	1
Total			**2**

A total of three publications had the main subject of EHRs, but a focus on Digital Hospital. In these publications, the existence or non-existence of EHR benefits is mentioned. However, Digital Hospital refers to a broader area than EHRs. One of the conditions of being a Digital Hospital is the use of EHRs. The outputs of all three publications are different from each other. Publications that claim to have dealt with EHRs dealt with Digital Hospital. This situation shows that the publications made mention the benefits of Digital Hospital.

Table 7: Include Status of Publications Addressing EHR, Main Subject of EHR

Main Subject	Highlighted Subject	Outcomes	Total Number
EHR	EHR	Clinical Data Quality	2
		Physician-Patient Communication	3
		Predictive Analysis	2
		Visits and Hospitalizations (+)	2
Total			**9**

A total of nine publications had a main subject of EHRs and claimed to focus on EHRs. These studies also constitute the focus of our work. As a result of the searching made to follow the research strategy, out of 702 publications obtained from the scans, 286 publications on EHRs were obtained. Of these, 64 publications were directly related to EHRs and EHR functions. Of the 64, only nine were directly based on EHRs. As given in the tables above, all of the other included publications claim that they are about EHRs, but actually, they focus on the functions of EHRs. Making positive/negative evaluations about EHRs by looking at the outputs of these publications can produce confusion. When looking at the outputs of the publications on EHRs, it is seen that the outputs are obtained under the titles of Clinical Data Quality (2), Physician-Patient Communication (3), Predictive Analysis (2), and Visits and Hospitalizations (+) (2). This shows that only 1.8% of the publications that claimed to be related to EHRs are directly related to EHRs. Therefore, concluding the usefulness of EHRs based on these publications can lead to misunderstandings.

Table 8: Include Status of Publications Addressing Meaningful Use, Main Subject of which is EHR

Main Subject	Highlighted Subject	Outcomes	Total Number
EHR	Meaningful Use	Adoption of EHR	1
		Quality of Care	1
Total			**2**

Two publications had the main subject of EHRs, but the focus was on Meaningful Use. In these publications, the existence or non-existence of EHR benefits is mentioned. However, the subject put forward in the publications is Meaningful Use, a function of EHRs. As a result of the publications, it seems that output has been obtained under more than one heading. This situation shows that the publications made mention the benefits of Meaningful Use.

Table 9: Include Status of Publications Addressing Telemedicine, Main Subject of which is EHR

Main Subject	Highlighted Subject	Outcomes	Total Number
EHR	Telemedicine	Health Information Integration	1
Total			**1**

One publication had the main subject as EHRs but focused on Telemedicine. This publication mentions the existence or non-existence of EHR benefits. However, the subject put forward in the publication is Telemedicine, which is a function of EHRs. As a result of the study, it is seen that the output has been obtained under the title of Health Information Integration. This situation shows that the publications made mention the benefits of Telemedicine.

Table 10: Include Status of Publications with Meaningful Use as Main Subject

Main Subject	Highlighted Subject	Outcomes	Total Number
Meaningful Use	Meaningful Use	Adoption of Meaningful Use	1
Total			**1**

On publication with the main subject, Meaningful Use was obtained. The subject that this study put forward was also Meaningful Use. As a result of the publication, it is seen that the output was obtained under the title of Adoption of Meaningful Use. Meaningful Use gives an idea of how meaningful EHRs are used. The primary aim here is to use the EHR for its purpose by rich data content. If this condition of use is not met, it will not be possible to talk about meaningful use of the data obtained from EHRs. Therefore, to declare an idea that EHRs are useful or not based on Meaningful Use will confuse.

Table 11: General Evaluation of the Publications Based on the Study

Main Subject	Highlighted Subject	Include	Total Number
CDSS	CDSS	12	13
Telemedicine 1			
CPOE	CPOE	4	4
EHR	CDSS	21	46
	CLMA	4	
	CPOE	6	
	Digital Hospital	3	
	EHR	9	
	Meaningful Use	2	
	Telemedicine	1	
Meaningful Use	Meaningful Use	1	1
Total Number			64

In the literature, 59.26% of the studies dealing with the benefits of EHRs are not directly related to EHRs, but they discuss the benefits of EHR functions. The natural advantages of attributes are mentioned in the 1.28% of the studies that deal with such things as the benefits of EHRs, the ease of access provided by EHRs, etc. These findings show that EHRs do not have a direct and distinct effect on health care quality, but the functions built on EHRs (CDSS, CLMA, e-order, etc.) do have an enhancing effect on health care quality.

DISCUSSION

The literature review given studies reflecting our research methodology have been discussed, and similar and different aspects of the study have been revealed. When we look at the literature, our aim to deal with all these studies is to show that EHRs are meaningful when used with EHR functions. There are many studies in the literature about the benefit of EHRs on health care quality, but a complex situation arises when we examine them. While some studies reveal that EHRs do not benefit health care quality at all, some argue that it is very beneficial. To eliminate this ambiguity, the literature was searched within the scope of our study, and the conceptual confusion was tried to be removed by considering related studies. We tried to reveal whether EHRs are beneficial on their own or when considered together with EHR functions. Thus, a literature review was obtained on what kind of benefits EHRs and EHR functions provide for health care quality.

In a study by Pevnick et al.(2015)"ISSN":"1558349X","abstract":"Purpose: The effect of computerized physician order entry (CPOE conducted on CPOE, its effect on radiology requests was discussed. As a result, it has been observed that CPOE increases communication between physicians and reduces unnecessary requests. All these studies indicate that CPOE makes EHR functional if used actively.

In a study by Lorsbach et al.(2020)as well as reforms in emergency medical care, is currently part of political debate in Germany. Currently, no data are available of how emergency departments could benefit from an ePA or NFD in Germany. The aim of this study was to determine if a patient's medical history has an influence on diagnostic and therapeutic decisions in the emergency department. Methodology: To answer this question, a descriptive observational study was conducted in an interdisciplinary emergency department with a study population of n = 96. Results: For 55 patients (59%, the use of EHRs and CDSS in Emergency Departments was discussed. Here, it was seen that treatment and diagnosis decisions could be made more reliably using EHR and CCDS warnings. It has been concluded that the time taken to record medical history in emergency services can be reduced with the implementation of EHRs and CDSS. Finally, in a study by Ben-Assuli and Leshno (2016), to predict a specific risk factor related to the hospitalization period of the errors

in the intensive care unit, they evaluated the effect of EHRs on the diagnosis and acceptance decisions of emergency physicians using the Bayes Method. As a result, it has been observed that the use of CDSS shortened the length of stay and significantly reduced the stress conditions associated with hospitalization.

The findings obtained within the scope of the research are consistent with the models measuring the adoption of EHRs. For example, in HIMSS EMRAM (Lin, K. Jha, and Adler-Milstein, 2018), while the adoption/maturity models developed by EHRs accept the existence of EHRs as the lowest level in their models, they see the proliferation of functions built on EHRs as a sign of EHR adoption.

In addition, within the scope of the literature review, it has been observed that the studies addressing the benefits of EHRs address EHR functions. Among these studies, it is seen that in the case of CDSS in EHRs, physicians can make quicker decisions and diagnoses, reduce drug application risk factors, shorten the patient length of stay, and shorten the physician's response time to consultation requests. As a result of all these studies, it is mentioned that EHRs are beneficial. In fact, these studies talk about the benefits of CDSS. All studies addressing the use of CDSS in EHRs show that EHRs are beneficial not when used alone but also in conjunction with CDSS.

Contrary to the results we obtained, studies addressing the negative effects of EHR use suggest that communication between physicians increases positively during periods when EHR use is low. Additionally, there is an increase in the number of tests ordered and unnecessary requests for tests during periods of intense EHR use. However, the existence of EHRs ensures that the tests ordered, and the procedures requested or planned are recorded. This situation protects healthcare workers against malpractice cases and, most importantly, ensures patient safety. The point to note here is that the use of EHR alone is not evaluated. It is the evaluation of whether EHR provides benefits or not by considering its functions.

The findings from this study provide valuable information to make more informed decisions about the definitions and use of EHR-related concepts and eliminate the conceptual ambiguity regarding the benefits of EHRs. It also sheds light on other studies to be conducted in this context.

CONCLUSION

In the literature, it has been observed that 59.26% of the studies dealing with the benefits of EHRs are not directly related to EHRs, but they discuss the beneficial condition of EHR functions. 1.8% of all studies included in this study that focused on the benefits of EHRs, not EHRs, were seen as a natural advantage. When these data are taken into consideration, it shows that most publications that seem to deal with the benefits of EHRs are focused on EHR functions instead. EHRs are not seen to provide benefit when evaluated independently of EHR functions.

In this study, we tried to provide valuable information to make more informed decisions about the definitions and usage of the concepts related to EHRs. Also, we tried to eliminate the conceptual ambiguity about the benefits of EHRs. We found that the presence or current use of EHRs does not affect the quality of health care alone but does affect when used together with EHR functions. When the studies are examined, it is seen that EHRs have many functions, including CDSS, CLMA, CPOE, Meaningful Use, Digital Hospital, and Telemedicine. All these factors are EHR functions. In addition, EHRs cannot be considered independent of the EHR Systems modules they contain, such as Radiology Information System, Cardiology Information System, Chronic Disease Management System, Laboratory Information System, and Pharmacy Information System, etc. These are the systems included in EHRs and that affects EHRs. Figure-5 shows the relationship between EHRs, EHR Systems, and EHR Functions.

When the studies selected within the scope of the research are examined, it is seen that the studies claiming that EHRs are not useful only to deal with the existence of EHRs. It isn't able to benefit if used without EHR functions. Therefore, the most considerable point of this study is the content and scope of the studies dealing with EHRs. This situation also shows that EHRs do not directly and significantly affect health care quality, but EHR functions (CDSS, CLMA, e-order, etc.) do have an enhancing effect on health care quality.

This study also sheds light on other studies to be conducted in this context. Subsequent studies that will address the benefits of EHRs will also allow this concept confusion to be avoided. One of the limitations of this study is the inability to reach the full text of some studies. These studies had to be excluded

for this reason. In addition, the limited number of studies that are compatible with our research methodology both constitute a research constraint and reveal the original value of the study. This situation also clearly shows the contribution of the study to the literature.

Ethical Approval: Ethical approval was not required as the study was "review".

Authors' Contributions: İlker KÖSE (%50), Sinem CECE (%30), Esra BAYRAKTAR (%20)

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