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The impact of electronic health records on communication between nurses and doctors

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Abstract---Background: The introduction of Electronic Health Records (EHRs) has transformed healthcare communication, particularly between nurses and doctors. Traditionally, paper-based documentation was prone to errors and inefficiencies, but EHRs provide a centralized platform for real-time data sharing. **Aim:** This research explores the Impact of EHRs on communication between nurses and doctors, focusing on their benefits, challenges, and effects on healthcare delivery. **Methods:** A literature review was conducted to analyse studies on HER implementation, highlighting its influence on communication, data accessibility, and the challenges of information overload and fragmentation. **Results:** EHRs have improved communication by ensuring accurate, real-time data exchange, reducing errors, and enhancing collaboration. However, Challenges like information overload and system issues remain. **Conclusion:** EHRs have significantly Improved nurse-doctor communication, enhancing patient care. Overcoming existing challenges will further optimize their role in healthcare settings.

Keywords---Electronic Health Records (HERs), nurse-doctor communication, healthcare collaboration, information exchange, patient care.

Introduction

The integration of Electronic Health Records (EHRs) into healthcare settings has marked a significant shift in the way patient data is managed and shared between healthcare providers. Among the most profound changes has been the enhancement of communication between nurses and doctors, two essential pillars in patient care. Traditionally, the communication between these professionals relied heavily on verbal exchanges, handwritten notes, and paper-based documentation, which were prone to errors, delays, and misinterpretation. However, the introduction of EHRs has transformed the healthcare environment by providing a centralized, accessible, and real-time platform for the storage and exchange of patient information. This digital shift enables healthcare teams to communicate more effectively, reducing the likelihood of medical errors and improving overall patient outcomes. This research explores the role of EHRs in enhancing communication between nurses and doctors, examining the benefits, challenges, and the impact on the healthcare system as a whole. [1,2]

Improving The Relation between Nurses and Doctors through use of Electronic Health Records

In this paper, I focus on the impact of EHRs on nurses' and doctors' communication and collaboration. Originally, healthcare communication was mostly based on face-to-face conversations, documentation and shared notes on

paper and other electronic media that were characterized by inaccuracy, misunderstanding and time inefficiency. The use of EHRs has greatly reduced these challenges since patients' data can be easily entered in a centralized recording and retrieval method that is also standardized. This transformation means that both registered nurses and doctors have easy access to actual and current medical information they can use to make good decisions and collaborate on the outcomes. To the nurses EHR has made the task of documenting on the flow chart, the administration of medications and changes observed in the patient easy. These entries are accessible on-line for doctors' review, allowing them to get a quick picture of the situation and to take prompt actions if necessary. Likewise, when doctors enter orders or write up notes to other clinicians using the alphabetic keyboards, the nurses are able to retrieve and act on the orders without time delay due to poor writing or lost papers. These unimpeded shifts in information make medical mishaps rare and also guarantee that patient treatment is well-coordinated. [3] In addition, EHRs have decision support built into them so that nurses and doctors can directly communicate through, for example, secure messaging to ask about or clarify a patient care issue. They save time to be perused on physical discussions and even phone calls which can be very time consuming in areas such as emergency or ICU. However, messages can be sent and received within the system so as to ensure that the communication is quick and efficient enough to support the organizational relation. It is most helpful at handovers or if several different practitioners are treating the same client in order that there's constant information transfer and little to no gaps. [4] Also, EHRs provide improved continuity of communication through integrated alerts and reminder systems that inform care givers about important information that may include; High risk results, and any possible contraindications with certain medications. These automated features help to make sure both human and human are in the same view about the current status and treatment of the patient. In addition, EHRs eliminate or reduce a lot of confusion that is likely to occur from different opinions or methods of doing things as it maintains medical terminology and methods.[5]

Finally, it is estimated that EHRs are effective instruments in the facilitation of nurses and doctors' cooperation. EHRs enhance the quality and flow of patient care by offering a single common place for the exchange of real time information, and by integrating communication and working tools within the system. With the evolving health-care structure, the implementation of EHR at full potential will certainly help in improving the co-operation between the care providers.[6]

The Impact of Electronic Health Records on Information Exchange Precision and Timeline

EHR have greatly improved the quality and speed of data flow in the health care sector, while solving some of the problems, such as those arising from the use of paper-based records. Prior to EHR development, communication of patient information took place via documentation, word of mouth or paper based records which could be lost, misunderstood, or delayed. This has however been made easier by the implementation of EHR systems, that create a digital store of the patient data in a single location, making it very easy to share the data across the care team in real time.[7] This has most profoundly made through mastery of data

entry of EHR as one of the chief attributes contributing to accuracy of information exchange. Since data fields, templates, and terminologies are created in advance, the incorporation of EHRs also helps reduce obscure or, sometimes, inconsistent records. For example, using handwritten notes, it is often difficult to decipher, or the handwriting can be messy, thus leading them to type the information on structure formats. [8] Also, EHRs are developed with certain validation checks by which users are alerted to a problem or lacking information, which they need to address before completing entries. This systematic approach makes the information that is exchanged between the provider complete and of high quality to the patients.[9] The flow of Information has also been enhanced by EHRs, the rate at which they are exchanged is also faster. Previously, moving patient records within departments or between facilities can take hours or sometimes days, primarily when using physical transport. Data is real – time available to certified positrons across the health network in case of EHRs. For instance, when patient finds himself from the emergency department to the surgical ward then all records of the patient's medical history, investigations done as well as assessment/treatment plans for the patient are instantly accessible by the receiving team. Such swift access reduces on time Frey, which is extremely important for the healthcare providers, especially while making diagnosis recommendation or while providing treatment.[10]

Further, the data in EHRs are constantly updated and all the people in the a healthcare team are treated with the updated information. For example, when a physician prescribes, a test, or changes a patient's treatment plan such changes are recorded and notified instantly to the nurses and other care givers. This instant synchronisation helps to decrease the risks of misunderstandings and increase the effectiveness of the care, which is provided. In addition, unlike human intervention, alerts and reminders improve the speed and precision by informing the providers on critical information, including abnormal results of the laboratory test or the existing drug interaction instantly.[11]

What Nurses Are Saying About Electronic Health Records Challenges to Nurse-Doctor Communication

EHRs have no doubt brought several significant advantages in the forward-most of the healthcare division, including documentation, patient safety and care coordination. Still, based on the many benefits of EHR, they are associated with new complexities in relation to the communication between nurses and doctors. Although EHRs simplify the flow of patients' information, it is found to generate barriers which impact the quality and speed of information exchange. Such challenges can be attributed to technical or operational problems, changes in the way managers and others communicate in the course of work, or interruptions in an organizations continuum of work. Some of the main concerns of interaction between nurses and doctors that have arisen in connection with the use of EHRs are discussed in this article.[12]

It is also known as: Information Overload and Data Overload

However EHRs also present with a major problem that's information overload. Large volumes of data are created by patients, and EHRs make it almost

impossible to manage the overload of information for clinicians in practice settings, particularly those that are highly dynamic. Hunt et al. note that both nurses and doctors are assumed to sort through many scopes and types of information such as clinical notes, tests' results, medicines' histories, etc. On this Bellack and Tales, opine that this can slow down the search process especially in facilities where time is of the essence such as the intensive care units.[13] Due to hours spent moving from one section of the HER system to another, doctors and nurses may be limited on the time that they can spend actually talking to one another. Instead of doing face-to-face communication or blunt information exchange, they might spend much time on reference to the sizeable database kept in the system. This is particularly acute when there are several parameters that must be passed from one caregiver to another in the course of shift change. The inherently large content of EHRs can create work impedance issues and errors; with large volumes of the important and less important clinical information, the dissemination of patient information can be hindered effectively. [14]

They included; Fragmentation of communication

Even though EHR is a good tool for the repository of all patients' data, the interaction between the nursing staff and physicians may be disrupted owing to EHR organization. In the case of EHR, the patient data are discretely divided into sections such as medication, laboratory result, clinical history and so on, which denies the nurses and doctors an overall picture of the client. The paper based system would allow the healthcare providers to read through the entire record in a narrative form and thus are able to put together a patient's story and in doing so evaluate a patient's condition better.[15] But unlike CDRs, EHRs can sometimes necessitate the use of multiple areas of the system to accumulate all of the information needed. This may slow down the doctor and nurse interactions because some important changes in a patient's care may not be evident within the HER system and, therefore, may not be discussed between doctors and nurses. For instance, a nurse could change a patient's vital signs or medication schedule to the system, but the doctor will not notice such amendments if he/she is only viewing different part of the application. The absence of full, updated, 'big picture' view of a patient's file can complicate work and may slow down, distort communication between nurses and physicians.[16]

Technical problem with the system and action taken during and after the down time

The fourth major issue that impacts on the communication between nurses and doctors within an EHR environment is technical issues, and system availability. HER systems are an important input to healthcare facilities since they provide a function of storing and sharing information about patients. However, such systems are not immune to have a few limitations. Malfunctioning system, bugs, slow processing speed, and user interface issues affect tasks completion and the overall interaction between health care givers. [17] In this case, an absence of information flow, for example, due to a nurse or a doctor's inability to get access to a patient's information as far as the system crashed, or connection problems occurred would lead to clinical repercussions. In an environment such as critical care where some decisions depend on time these disruptions in the HER system

pose a big threat to patients' safety. Also, the time consumed to search for errors and the time it takes to get the system to perform optimally cuts down on the time doctors, nurses, and all healthcare workers have to spend on caring for patients for they themselves work under tight schedules.[18]

User Resistance and Training Deficiencies

Another challenge involves poor nurse-doctor interaction regarding the use of HER, poor user uptake, and limited training on the systems. First, and harmonious with earlier comments, the EHR is intended to augment the workflow and improve the communication process and, consequently, may bring new paradigms into the organisation's clinical practice, paradigms that some of the professionals engaged in that organisation might not be willing to accept. Users of the system include doctors and nurses who may take time to go through this learning process since they have been used to the old ways of documentation and giving information. One of the main challenges of implementing EHRs is the high rate of adopters' difficulty in navigating EHR systems due to lack of computer literacy skills.[19,20][Failure to train members on proper use of the HER system] can also contribute to this since, members will be completely unaware of what aspects have been captured. If the clinicians themselves are not well-equipped about how this complicated system actually works or how to use this myriad of technical communication apparatus, they would not be best situated to optimise the available features. This can result in problematic routines which increase time wastage, misunderstanding and errors that affect the relationship between the two professions, nurses and physicians. Additionally, if a provider is not confident in utilizing the program, they might resort to using other means of patient interaction, for instance, through the phone or on paper, the information flowing in and out of patient's record may be inconsistent; hence, patients suffer from communication hitches. [21]

Effectiveness on Face to Face Communication

Another relationship that has been touched by the use of EHRs is the way that nurses and doctors directly interact with each other. Whereas EHRs allow providers to do this very efficiently, at other times the same EHRs provide resistance to interpersonal communication. The more attention is paid to recording data or to data displayed on a computer screen, the less important talking face-to-face gets. This can result in a transition from collective, face-to-face interaction to more unidimensional and detached screen-basis communication.[22] For instance, doctors could spend a lot more time on the aspects of the HER system instead of having face-to-face conversations with the nurses, and the vice versa. This may lead to ambiguity in the engage and disruption of the passing of some key info between the two parties. Some questions can be explained, some insights can be shared and mutual understanding attained through direct communication which is not easy in an only digital platform.[23]

Patient Privacy and Confidentiality refused to disclose any information relating to my patient

Lastly the integration of EHRs have been associated with issues of patient privacy and confidentiality that hinders the interaction between nurses and docs. Each party has access to patient records under very specific procedures that sometimes may pose a challenge to quick sharing of information. For instance, a nurse may need permission before checking a doctor's note and this hinders the sharing of the status of a patient or the plan on how to treat him or her.[24] However, there is the risk of loss of information or perhaps unauthorized access to mean patient data which makes the whole idea even more cumbersome. Every health care worker has to be cautious with the patient information and this extra caution in matters of confidentiality may sometime result to reluctance in sharing information even among the health care team workers.

What Integration of EHRs Does to Con tribute to the Interaction in Healthcare Teams

Electronic Health Records (EHRs) have fundamentally transformed how care teams work together, and provided a platform for efficiency in care aim at encouraging inter-professional communication and cooperation. Using of EHRs allows several health care teams to capture, enter, review and exchange patient data and information in real time that ultimately supports increased decision making and better outcome of the patients. In the form of EHRs, patient data are centralized within a digital environment, thus improving collaboration but also reducing inefficiencies, mistakes, and enhancing overall cohesiveness in patient centric care. This evolution in collaboration matters particularly at this time that healthcare is progressively becoming sophisticated and requires a convergence of many fields to address the various needs of the patients. [25]

- **Enhanced Ability to Share Patients Information**

In one of the capacities, flexibility contributes more towards enhancing collaboration by increasing the access to different patient information by the different care givers. The problems such as missing, lost or unclear records were frequent when health organizations used paper based systems of medical records and communication between the members of the team was not always effective. An EHR is an electronic record of patient health information that provides the complete record of the patient's medical history, including demographic data, diagnoses, medications, lab results, allergies, and treatment plans, in a manner that is readily accessible by authorized care givers at any time and from any geographical location.[26] The patients record thus improves better decision on patient status hence the increased comprehensive patient information helps with better decisions. For instance, a specialist who wishes to speak to a primary care physician or a nurse about a patient requires the progress and patient history to be easily retrievable through the HER system. This in turn reflects to increased co-ordination of care since the individual son the respective teams end up knowing the state of the patient as well as their treatment needs. This method such as also reduces the duplication of tests, the chances of errors, and also improves the discharge of care especially in institutes such as hospitals. [27]

- **Real Time Communication and Information Disclaimer**

EHRs also help with ideal interactions and the exchange of knowledge, which greatly improves multispectral cooperation in the scope of the care of a patient. When it comes to healthcare situations, speed is of essence especially when communicating with other people in a fast-paced environment EHRs offer a way of getting everyone to the right information irrespective of the action being taken. For added example, when a physician prescribes a test or adjusts client's medication plan, the information goes directly to the nurse, other specialists, and any other carer dealing with the particular patient. Such instantaneous distribution of information keeps the time lag for treatments minimum; it also reduces the chances of mapping or misinterpreting communication between the employees of different shifts.[28] In addition, many HER systems provide functions such as message boards, alarms, notification that enable the provider to directly communicate through such system. For instance, if a nurse observing a patient realizes there is something wrong with the patient or in the process of administering the medication, the nurse is free to alert the doctor instantly through the messaging option of the HER as the team remains informed of any drastic change. This feature advances unity of work by expediting the manner in which employees implement patient care, voice their concerns, and proffer any recommendations that will favour the patient's wellbeing.[29]

- **Simplified Work Flow and Oversee of Activities**

EHRs have an essential function in task distribution and work management in various multidisciplinary teams. Prior to the adoption of EHRs, physicians and other caregivers often worked from paper charts; notes scribbled on paper; and face-to-face communication or calls to set up and coordinate care and document patient activities. This led often to ineffective coordination, missed operations and fragmented care. Electronic health records take structured and systematic form that enhances the Ease at which healthcare providers can monitor the progress of care, lab results, appointments, procedures as well as medications. [30] Another option that is common in EHRs are the information support tools such as a reminder and checklist as well as the ability to automatically update tasks' completion time. For instance, if a nurse requires to give a particular set of drugs or perform a specific process, the HER system can send a notification to the nurse, to avoid missing it. Also, in the same manner, doctors can be able to view the progress of the patient through the relatively advanced HER system to make sure that all follow-up actions, including the ordering of extra tests or referrals to appropriate specialists are carried out diligently. This kind of optimized management process minimizes the chances of mistakes and brings more effectiveness in healthcare delivery hence high quality care by various health care teams.[1]

- **Multidisciplinary Team Collaboration**

EHRs promote the integration of care through abolishment of the hierarchy and silos inherent in the classic healthcare provider role. Historically, collaboration between doctors, nurses, specialists, pharmacists and other members of the multi-disciplinary team used to require invaluable use of telephones, face-to-face

contact or word of mouth and handwritten notes. These methods were not only time consuming but were also typical of misconception and error prone.[1,2] On the other hand, EHRs facilitate different members in the healthcare team to view the same patient's data and contribute effectively into his or her care plan. For instance, a pharmacist can take a look at a patient's history and suggest how a doctor can change medications for the better since some drugs may react badly with others, while a nurse would be able to update the patient's status in real time. Professionals can consult across organizational structures through use of patient information and advice on matters medical. Healthcare disciplines lead to the generation of better and efficient healthcare approaches on this level, the efficiency of the model of the relationship between different professionals is steadily high so it is useful mostly in severe health emergencies, diseases with exacerbations, several somatic and chronic diseases, and complicated operations. Of critical importance is the case where EHRs help aggregate the healthcare teams ensure that each provider is optimized fully. This approach of involvement helps in discharging patient care needs with a holistic approach and makes a certain that no care provision is done without input from the other.[2,3]

• **Increased Patient Privacy and Decreased Medical Errors**

Greater use of EHRs has been proven to improve patient safety through the decreased chance of medical mistakes, which will necessarily improve workplace communication among members of the healthcare teams. For instance EHRs can help to produce warnings about potential drug interactions, allergies, or contraindications in drug prescribing where a doctor/pharmacist is immediately informed of any dangers before they occur in a patient's case. These notifies also help the nurses or other team members that is giving medication or doing procedure to be able to detect safety concerns or hazards that would result to adverse events.[4,5] Furthermore, EHRs play a vital role of enhancing the compliance and recent updates of patient records . writing, or missing some crucial data; in an electronic system the mistakes that are possible are illegible or misplaced data or erased data or old data which might lead to wrong treatment or wrong diagnosis. EHRs, therefore, have the added benefit of a Structured format used for the documentation of the patient information therefore minimising on the organization errors occasioned by incomplete or erroneous records. This paper aims to provide evidence that EHRs have positive impacts on decision making, coordination among care givers and safety of the patients due to improved and complete patient information. [6,7]

Health Care Data and Enhanced Patient Care Services

EHR makes it possible to acquire rich sources of patient information for purposes of effective care co-ordination and also for enhancement of patient care. Within the HER system, data analytics tools can be used by healthcare teams to look at trends, evaluate patient outcomes and make strong decisions about patient care. For example, EHR information can be used to find out which of the patients is at risk, to monitor their condition, and to evaluate the outcomes of treatment guidelines.[8] The collected signals can be transferred to the structure of EHRs to facilitate treatment planning and stimulate the healthcare teams to step up and be more proactive. For instance, if a patient deteriorates, or develops other

complications or symptoms, the care team can follow up in the HER by reviewing the changes and modifying appropriate treatment plans. Thus, being promptly oriented at the need for intervention, as well as at interprofessional of the all members in the team, such an approach to patients' care elevates outcomes in the economical and effective means for recovery.[9]

Interprofessional Communication and Health Information Exchange in the Preface to the Use of Electronic Health Records

Electronic Health Records (EHRs) have become a significant milestone in the healthcare system because they bring about better health care cooperation among health professionals in order to increase patient care. Effective communication among and between health care professionals like the physician, nurse, pharmacist, specialist, and other care givers throughout a patient's care process is paramount in the overall individual patient care delivery. Earlier, the interprofessional communication within health care organization/ facilities faced several barriers such as; fragmentation of information, lack of clarity in documentation and time consuming procedures. Most of these challenges have been solved by introduction of EHRs as it avails good flow of information that improves decisions and interdisciplinary collaboration. [10,11]

- **Integrated Records of the Patients**

Easily the most important of these effects of EHRs to interprofessional communication is the fact that EHRs allows for the consolidation of all patient information within one system. Often in a paper system every healthcare personnel has files of their own and passing information from one professional to another may take time. EHRs causes different patient data from different departments to be compiled in electronic form and can be accessed by any authorized person at anytime and from any place. The practical impact of having central Patient Administration Lie is that all members of the healthcare team are able to see all of the same information about the patient and also have the most up-to-date information which will help in there being less confusion and misunderstandings as well as less chance of a mistake being made.[12,13] For instance, when a nurse records a patient's health status, this gets disclosed to the treating doctor, sub-specialists, and the dispensing pharmacists treating the specific patient. The doctor can read what the nurse has written down while the pharmacist can confirm the patient's medication profile in the event of drug incompatibility was likely to occur. By such access, there will be little repetition of questions, care co-ordination will be enhanced as well as every health worker who is treating the patient will be on the same level regarding decisions to be made on the treatment of the patient.[14]

- **Real-time updates and Alerts**

EHRs also incorporate the ability to update on real time basis, this is very important in improving those communications between the health care workers. The paper documents that were used earlier led to a flow of communications being slowed down because the providers had to wait for the physical paperwork to be handed over to them or they had to receive verbal information. This could

result in poor coordination of care, for the information may not be available at the time that it is required, or could contain selective information of what was wanted. In EHRs, where one of the patient's status can enhance, for instance a diagnosis results, lab results or changes in the medication, this is reflected in the system making the information available to the concerned members.[15]

- **Frx improved communication accuracy & clarity**

The discussion of best practice communication skills also underlines the vital importance of paying close attention to minimizing any misunderstandings or mistakes in the management of patients within health care organizations. By implementing EHRs, there will be reduced ambiguity and inaccuracies of the data produced because a common format is used to collect and share information. As opposed to handwritten notes which can be very ambiguous and can be easily misunderstood, EHRs offer preprinted templates and the fields in which information is entered do not allow free writing and so can easily be understood by others studying the notes.[16]

Also, EHR adults use standard codes for health conditions such as ICD-10 as a diagnosis code or SNOMED- CT as clinical descriptors to lessen the possibilities of confusion in message content. These standardized codes and terminologies make the global language of healthcare e standard and help the different healthcare providers to use the same word or perhaps the same code while writing or in developing an interchangeability when speaking about the same patient. Such a consistency does not only enhance the verbosity of the messages but also reduces the chances of incidence of errors as a result of misunderstanding the handwritten or orally communicated word.

Improvements in Interdisciplinary Relationships

As the actual delivery of modern patient care in the healthcare industry is done professionally by a team of professionals who include physicians, nurses, specialists, social workers, physical therapists and many others. Due to the structure of disciplines in treating patients, EHRs help to improve the cross-disciplinary cooperation that has the possibility of using a unified medical record to reach a mutual understanding of a patient's state. For instance, a patient with a chronic disease needs a general practitioner, a dietitian, a physiotherapist, and a consultant. These professionals are able to work more effectively as a team because each member has access to the patient's electronic health records with the patient's information, treatments, and results in addition to the notes made by other care givers all from a remote location.[17,18]

Conclusion

Thus, the implementation of EHRs has changed the communication between the nurses and doctors for the better among the healthcare personnel, thereby; facilitating how the interprofessional team share important information about the patient. This has been executed by reducing the barriers as posed by the conventional paper-based methods of record keeping thereby enabling quick data sharing hence quicker decisions for improvement of patients' care. It is for this

reason that EHRs not only enhance the accuracy and efficiency of information exchange but also bring a more coordinated of care across the members of the patients' circle of care. Nonetheless, the process of implementing EHRs is far from perfect and there are some barriers, electronic data overload, a number of technological factors, and the division of information into many channels. The following challenges should therefore be addressed to allow full realization of the benefits of EHRs by healthcare organizations; Training on the system; Optimization on the system; Interdisciplinary collaboration. In conclusion, further development of HER systems will contribute significantly to the refinement of healthcare quality, the increase in patient protection levels, and the optimization of the effectiveness of the principal functions of the health care system in the context of the growing shares of the digital society.

References

1. Budiayanti, R. T., Herlambang, P. M., & Nandini, N. (2019). Tantangan Etika dan Hukum Penggunaan Rekam Medis Elektronik dalam Era Personalized Medicine. *Jurnal Kesehatan Vokasional*, 4(1), 49-54. <https://doi.org/10.22146/jkesvo.41994>
2. Intansari, V. P. (2019). Evaluasi Prosedur Pelepasan Informasi Rekam Medis Kepada Pihak Ketiga di Rumah Sakit Universitas Airlangga Surabaya. *Diploma thesis, STIKES Yayasan RS. Dr Soetomo*.
3. Koten, E. H. B., Ningrum, B. S., & Hariyati, R. T. S. (2020). Implementasi Electronic Medical Record (EMR) dalam Pelayanan Kesehatan di Rumah Sakit: Studi Literatur. *Carolus Journal of Nursing*, 2(2), 95-110. <https://doi.org/10.37480/cjon.v2i2.45>
4. Lestari, S. S., & Hendra, M. D. (2020). Efektifitas Komunikasi Kesehatan Dokter dalam Mendiagnosis Penyakit Pasien Anggota KPPS Pemilu 2019 di Kota Pekanbaru. *Medium*, 8(2), 1-11. [https://doi.org/10.25299/medium.2020.vol8\(2\).5721](https://doi.org/10.25299/medium.2020.vol8(2).5721)
5. Liow, D., Himpong, M., & Waleleng, G. (2020). Peran Komunikasi Antara Dokter dan Pasien dalam Pelayanan Medis di Klinik Reci Desa Sinisir Kecamatan Modinding. *Acta Diurna Komunikasi*, 2(1). Retrieved from <https://ejournal.unsrat.ac.id/v3/index.php/actadiurnakomunikasi/article/view/27074>
6. Kurniawan, A. L., & Setiawan, A. (2021). Perlindungan Data Rekam Medis Sebagai Bentuk Perlindungan Data Pribadi Pasien Selama Pandemi Covid-19. *Jurnal Hukum dan Pembangunan Ekonomi*, 9(1), 95-112. <https://doi.org/10.20961/hpe.v9i1.52586>
7. Sieck, C. J., Pearl, N., Bright, T. J., & Yen, P. Y. (2020). A qualitative study of physician perspectives on adaptation to electronic health records. *BMC Medical Informatics and Decision Making*, 20*, 1-8. <https://doi.org/10.1186/s12911-020-1030-6>
8. Silaen, D. J. A., & Alferraly, I. (2019). Hubungan komunikasi efektif dokter-pasien terhadap tingkat kepuasan pasien dalam pelayanan medik. *Intisari Sains Medis*, 10*(2). <https://doi.org/10.15562/ism.v10i2.387>
9. Tareq Ahram, Arman Sargolzaci, Saman Sargolzaci, Jeff Daniels, and Ben Amaba. (2017). Blockchain technology innovations. In *2017 IEEE Technology & Engineering Management Conference (TEMSCON)*, IEEE, 137-141.

10. Jagmeet Singh Aidan, Harsh Kumar Verma, and Lalit Kumar Awasthi. (2017). Comprehensive survey on Petya ransomware attack. In *2017 International Conference on Next Generation Computing and Information Systems (ICNGCIS)*, IEEE, 122-125.
11. Abdullah Al Omar, Mohammad Shahriar Rahman, Anirban Basa, and Shinsaku Kiyomoto. (2017). Medibchain: A blockchain-based privacy-preserving platform for healthcare data. In *Security, Privacy and Anonymity in Computation, Communication, and Storage: SpaCCS 2017 International Workshops, Guangzhou, China, December 12-15, 2017, Proceedings 10*, Springer, 534-543.
12. Sunday Adeola Ajagbe, AO Adesina, and JB Oladosu. (2019). Empirical evaluation of efficient asymmetric encryption algorithms for the protection of electronic medical records (EMR) on web applications. *International Journal of Scientific and Engineering Research* 10, 5 (2019), 848-871.
13. D Akarca, PY Xiu, D Ebbitt, B Mustafa, H Al-Ramadhani, and A Albeyatti. (2019). Blockchain secured electronic health records: Patient rights, privacy and cybersecurity. In *2019 10th International Conference on Dependable Systems, Services and Technologies (DESSERT)*, IEEE, 108-111.
14. Muhammad Anshari. (2019). Redefining electronic health records (EHR) and electronic medical records (EMR) to promote patient empowerment. *IJID (International Journal on Informatics for Development)* 8, 1 (2019), 35-39.
15. W Bani Issa, I Al Akour, A Ibrahim, A Almarzouqi, S Abbas, F Hisham, and J Griffiths. (2020). Privacy, confidentiality, security and patient safety concerns about electronic health records. *International Nursing Review* 67, 2 (2020), 218-230.
16. M Ahmed, E Elaziz, and N Mohamed. (2020). Nurse's knowledge, skills, and attitude toward electronic health records. *Journal of Nursing and Health Science* 9 (2020), 53-60.
17. Andrew R Besmer, Jason Watson, and M Shane Banks. (2020). Investigating user perceptions of mobile app privacy: An analysis of user-submitted app reviews. *International Journal of Information Security and Privacy (IJISP)* 14, 4 (2020), 74-91.
18. Raag Agrawal and Sudhakaran Prabakaran. (2020). Big data in digital healthcare: lessons learnt and recommendations for general practice. *Heredity* 124, 4 (2020), 525-534.
19. Guy Aridor, Yeon-Koo Che, and Tobias Salz. (2021). The Effect of Privacy Regulation on the Data Industry: Empirical Evidence from GDPR. In *Proceedings of the 22nd ACM Conference on Economics and Computation*, 93-94.
20. Aisling R Caffrey and Austin R Horn. (2021). Considerations for protecting research participants. In *Pragmatic Randomized Clinical Trials*, Elsevier, 273-292.
21. Chapple, M., & Seidl, D. (2021). Cyberwarfare: Information operations in a connected world. Jones & Bartlett Learning.
22. Chen, H.-Y., Wu, Z.-Y., Chen, T.-L., Huang, Y.-M., & Liu, C.-H. (2021). Security privacy and policy for cryptographic-based electronic medical information system. *Sensors*, 21(3), 713.
23. Chen, L., Lee, W.-K., Chang, C.-C., Choo, K.-K. R., & Zhang, N. (2019). Blockchain-based searchable encryption for electronic health record sharing. *Future Generation Computer Systems*, 95, 420-429.

24. Chenthara, S., Ahmed, K., Wang, H., Whittaker, F., & Chen, Z. (2020). Healthchain: A novel framework on privacy preservation of electronic health records using blockchain technology. *PLOS ONE*, 15(12), e0243043.
25. Curtis, J. R., Sathitratanacheewin, S., Starks, H., Lee, R. Y., Kross, E. K., Downey, L., ... & Fausto, J. A. (2018). Using electronic health records for quality measurement and accountability in care of the seriously ill: Opportunities and challenges. *Journal of Palliative Medicine*, 21(S2), 5–52.
26. Cyran, M. A. (2018). Blockchain as a foundation for sharing healthcare data. *Blockchain in Healthcare Today*.
27. Dagher, G. G., Mohler, J., Milojkovic, M., & Marella, P. B. (2018). Ancile: Privacy-preserving framework for access control and interoperability of electronic health records using blockchain technology. *Sustainable Cities and Society*, 39,* 283–297.
28. De Aguiar, E. J., Façal, B. S., Krishnamachari, B., & Ueyama, J. (2020). A survey of blockchain-based strategies for healthcare. *ACM Computing Surveys (CSUR)*, 53(2), 1–27.
29. De Leeuw, J. A., Woltjer, H., & Kool, R. B. (2020). Identification of factors influencing the adoption of health information technology by nurses who are digitally lagging: In-depth interview study. *Journal of Medical Internet Research*, 22(8), e15630.
30. Dubovitskaya, A., Xu, Z., Ryu, S., Schumacher, M., & Wang, F. (2017). Secure and trustable electronic medical records sharing using blockchain. In *AMIA Annual Symposium Proceedings (Vol. 2017, pp. 650–659)*. American Medical Informatics Association.

تأثير السجلات الصحية الإلكترونية على التواصل بين الممرضين والأطباء الملخص

إلى إحداث تحول في التواصل في مجال الرعاية الصحية، وخاصة بين EHRs الخلفية: أدى إدخال السجلات الصحية الإلكترونية الممرضين والأطباء. كانت الوثائق الورقية التقليدية عرضة للأخطاء وعدم الكفاءة، لكن السجلات الصحية الإلكترونية توفر منصة مركزية لمشاركة البيانات في الوقت الفعلي.

الهدف: تستكشف هذه الدراسة تأثير السجلات الصحية الإلكترونية على التواصل بين الممرضين والأطباء، مع التركيز على فوائدها، تحدياتها، وتأثيرها على تقديم الرعاية الصحية.

الطرق: تم إجراء مراجعة للأدبيات لتحليل الدراسات المتعلقة بتطبيق السجلات الصحية الإلكترونية، مع تسليط الضوء على تأثيرها على التواصل، وسهولة الوصول إلى البيانات، والتحديات المرتبطة بفرط المعلومات وتجزئتها.

النتائج: حسّنت السجلات الصحية الإلكترونية التواصل من خلال ضمان تبادل دقيق للبيانات في الوقت الفعلي، وتقليل الأخطاء، وتعزيز التعاون. ومع ذلك، لا تزال هناك تحديات مثل فرط المعلومات ومشاكل الأنظمة.

الخلاصة: أحدثت السجلات الصحية الإلكترونية تحسناً كبيراً في التواصل بين الممرضين والأطباء، مما ساهم في تعزيز رعاية المرضى. التغلب على التحديات الحالية سيعزز دورها في بيئات الرعاية الصحية بشكل أكبر.

التواصل بين الممرضين والأطباء، التعاون في الرعاية الصحية، تبادل EHRs الكلمات المفتاحية: السجلات الصحية الإلكترونية المعلومات، رعاية المرضى.