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E-Prescription Implementation: An Analytical Study On The Transformation Of Medical Records From Physical To Electronic

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ABSTRACT
In this study, we explore the success of implementing an e-prescription system in the case of electronic medical records, and the factors that influence it. The introduction explains the importance of e-prescribing in increasing the efficiency and accuracy of the treatment process in health facilities. The method used involved observations of 40 journals covering various approaches, from qualitative to quantitative, with a focus on system design, management support, staff training, technology infrastructure, user participation, system development models, evaluation and maintenance, and user perceptions. This research uses a descriptive analytical approach by collecting data from various literature sources and previous research related to the implementation of e-prescriptions. Data were analyzed to identify challenges, benefits and development strategies in the use of e-prescriptions in the context of transforming medical records from physical to electronic. The research results show that the application of e-prescriptions has the potential to improve operational efficiency, patient safety and service quality. However, there are still obstacles related to user readiness, evaluation effectiveness, and e-prescription system development that need to be overcome. The discussion highlights the need to increase user readiness, evaluate the effectiveness of using e-prescriptions, as well as system development strategies that are appropriate to technological developments and user needs. Collaboration between stakeholders is also considered important in achieving successful e-prescription implementation. Taking these findings into account, coordinated and sustainable efforts are needed to increase the use of e-prescriptions in the context of transforming medical records into electronic form. By overcoming existing challenges and implementing appropriate strategies, it is hoped that the implementation of e-prescribing can make a significant contribution in improving the quality of health services and patient safety.

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INTRODUCTION

The rapid development of information in various fields has become a global phenomenon in the current era. The utilization of information systems in health services is one example. It is

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no secret that the use of information systems in health services can bring many benefits to healthcare providers (Prasetyawati, 2022). Electronic medical records are another example of information technology advancement in the health sector. The utilization of electronic medical records can bring many benefits and help improve the quality of medical services (Eryanan, 2022).

The transformation from physical medical records to electronic medical records (RME) not only increases efficiency in patient data management but also improves the quality of care provided. RME enables faster and easier access to patient information, which is crucial in making quick and accurate clinical decisions. RME updates patient medical information in real-time, reducing the risk of medical errors and enhancing coordination among various healthcare professionals. Alongside RME, advancements in health information technology also include the use of electronic prescriptions, or e-prescriptions. This transformation also brings many benefits in the context of e-prescription implementation, such as reduced prescription writing errors, increased efficiency in the drug distribution process, and improved patient adherence to medication. E-prescriptions allow doctors to send orders directly to pharmacies electronically, reducing the chances of misreading handwritten prescriptions and ensuring that the right medication is given to the patient.

In order to achieve successful implementation of RME and e-prescriptions, collaboration between the government, healthcare providers, and information technology developers is necessary. Clear policies and regulations must also be developed to support the widespread adoption of these technologies and ensure that all ethical and legal aspects related to the use of medical data are observed. Although there are challenges to overcome, the benefits of transforming medical records from physical to electronic are significant. The implementation of RME and e-prescribing has enormous potential to improve healthcare quality, operational efficiency, and patient safety. With the right support, these technologies can be a strong foundation for a more modern and responsive health system.

E-prescriptions play an important role in improving healthcare quality worldwide. E-prescribing is an important part of modernizing the healthcare system, as it has the potential to improve patient safety and enhance the quality of care. Electronic prescribing, or e-prescribing, improves medication safety by eliminating prescribing errors and ambiguities, according to Akindele (2019) study, which found that 43.8% of participants strongly agreed with this idea. According to research by Gildon, Condren and Hughes (2019), if the Electronic Health Record (HER) follows the rules set by the American Academy of Paediatrics (AAP), more than 83% of e-prescribing errors can be prevented. With the introduction of electronic prescriptions, researchers Lloyd *et al.* (2021) and Yang *et al.* (2021) saw a significant decrease in prescription errors. As a result, the error rate dropped from 6.94% to 1.96%. E-prescriptions help reduce medication errors by making it easier to change dosages, update prescriptions, and make them legible.

The impact and benefits of implementing e-prescriptions are mentioned in Kusumarini (2011) and Porterfield, Engelbert & Coustasse (2014). First, electronic prescriptions are safer for patients as they are easier to read, take less time to write, have fewer potential side effects, and cause fewer errors when administering medication. Second, electronic prescriptions help

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patients save money while improving medication maintenance. Thirdly, there is no need for human record-keeping as the data transfer procedure is automated. Fourthly, operational efficiency increases as this automated method requires fewer workers to complete the task. The use of barcodes on prescription labels and the ability to check drug codes through e-prescribing further improve the accuracy and safety of drug administration.

Successful implementation requires a comprehensive strategy that involves several key factors, such as thorough planning, dedicated team members, and support from facility management, funders, and computer system developers (R. Santoso & Nova, 2020). Financing and acquisition strategies are important aspects that need to be considered. Given the high implementation costs, we need detailed and sustainable financial planning to ensure the proper implementation and long-term functionality of all system components. In addition, workflow and process mapping are also very important to ensure that the e-recipe system can be integrated with existing workflows without disrupting ongoing operations.

A functional strategy entails identifying user requirements and how the system can meet them. This includes user interface customization, staff training, and ongoing technical support. Data strategy includes data management, security, and privacy of patient information, which are critical aspects of maintaining trust and compliance with applicable regulations. Furthermore, the technical strategy covers the selection of the appropriate technology, including hardware and software. Vendor selection is also an important step, as the quality and support of the vendor will greatly affect the success of the system implementation. The selected vendor should have a favorable track record and be able to provide solutions that suit the needs of the healthcare facility.

The implementation strategy involves practical steps to carry out the system, including piloting, phased rollout, and ongoing evaluation. Each stage of implementation should be carefully monitored to identify and address any issues that arise. The realization of benefits from e-recipe implementation should also be measured on an ongoing basis to ensure that the investment made delivers the expected results (Alfauzain et al., 2023).

The implementation of e-prescriptions is an important step in modernizing the healthcare system. While it requires significant initial investment and careful planning, the long-term benefits are enormous, including increased operational efficiency, reduced medical errors, and improved quality of healthcare. With the right strategy and full support from all parties involved, this transformation can be successful and have a significant positive impact on the global health system.

METHODS

This study used a literature review approach to identify, evaluate, and interpret articles relevant to the topic of electronic medical records in Indonesia. The purpose of this study is to answer the most frequently incomplete parts of medical record documents in hospitals, explore the successful implementation of e-prescription systems in the case of electronic medical records, and identify the factors that influence them (Purnamawati & Muna, 2021).

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Literature Search Procedure

A literature search was conducted using a combination of Indonesian and English keywords. The Indonesian keywords used included "medical records," "e-prescription," "electronic," and "Indonesia." Meanwhile, English keywords included "medical records," "e-prescription," "electronics," and "Indonesia." To expand and focus the article search, the boolean operators "AND" and "OR" were used.

Inclusion and Exclusion Criteria

In the article selection process, inclusion and exclusion criteria were determined. The inclusion criteria encompassed articles that explored electronic medical records using either a qualitative or quantitative research design, conducted in Indonesia, and did not fall under the category of systematic reviews or literature reviews. The articles selected also had to be written in English or Indonesian and published between 2013 and 2023. On the other hand, the exclusion criteria included articles that were irrelevant to the research topic and published before 2013, as well as articles that were in the form of systematic reviews or literature reviews. The goal of applying these inclusion and exclusion criteria is to obtain articles that are appropriate and relevant to the stated research objectives. The systematic review was conducted based on the PRISMA guidelines (Liberati et al., 2009). Online databases used included Google Scholar and Garuda Portal, which were systematically searched for empirical articles in English and Indonesian. The article search was conducted by two researchers simultaneously on May 7-8, 2024. Both researchers collected data, then selected titles and abstracts to eliminate duplicate articles. This selection was also carried out to examine articles that were relevant to the research objectives.

Data Synthesis

In the final stage, researchers synthesized the narratives separately and then discussed the results to reach agreement. After the article selection process, the articles obtained were synthesized in a format that included: Researcher name and year of publication, Research design and Research focus (Apriliyani, 2021).

The results of the article synthesis are shown in Flowchart 1, which illustrates the process of searching, selecting, and synthesizing articles systematically.

Table 1. Synthesis Flow

No	Stages	Process	Number of Articles Involved
1	Identification	Initial searches were conducted on online databases such as Google Scholar, Garuda Portal, Emerald, and DOAJ. From this search, a total of 214 articles were obtained. From the identification results, 16 double articles were excluded, leaving 201 articles for the next stage.	214
2	Screening	At the screening stage, 201 article titles and abstracts were reviewed to determine relevance to the research topic. From this process, 49 articles were deemed irrelevant.	201

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No	Stages	Process	Number of Articles Involved
3	Eligibility	From the remaining 151 articles, a more in-depth review and selection was conducted based on the predetermined inclusion criteria. From this stage, 89 articles were excluded because they did not meet the predetermined inclusion or exclusion criteria.	151
4	Synthesis	After the selection process, 40 articles were selected for narrative synthesis.	70

Source: Data Processed

Research Flow Chart

This flowchart shows the steps taken in the literature review process, from the identification of articles through online databases to the final synthesis of the selected articles. This diagram helps visualize the process and ensures transparency and reproducibility of the research conducted (Tominanto & Sari, 2020). With a systematic and clear methodology, this study is expected to provide a comprehensive overview of the implementation of electronic medical records in Indonesia, identify the most frequently incomplete sections in hospital medical records, and offer useful insights for improving the quality of the healthcare system.

RESULTS AND DISCUSSION

The article search found 70 articles that were suitable for narrative synthesis. Of these articles, 29 articles discussed the creation of electronic medical record systems, nine articles on readiness to use electronic medical records, 12 articles on implementation of electronic medical records, 18 articles on auditing electronic medical records, and two articles on improving electronic medical record systems. Each category of articles makes a valuable contribution to understanding the various aspects of electronic medical record implementation. These articles provide in-depth insights into the process of system creation and development, challenges and readiness for use, steps for effective implementation, and the importance of auditing and continuous improvement. All descriptions of the articles are detailed in Table 1.

Table 1. Article search results

No	Researcher Name and Year of Publication	Research Design	Focus of the Research
1	Santoso, Nuryati and Pramono (2020)	This study adopted a research and development approach to produce a Software as a Service (SaaS) based electronic medical record system for independent practicing doctors.	The research focuses on the development of a SaaS-based system for independent practice doctor clinics. The development results show the successful implementation of e-reports in independent practice doctors,

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No	Researcher Name and Year of Publication	Research Design	Focus of the Research
			contributing factors: flexibility, ease of access, and low cost.
2	Aprilisia, Amalia and Bachtiar (2021)	This study uses the Waterfall model approach in the development of a website-based electronic medical record and outpatient information system.	The research focuses on system testing and development using the Waterfall model. The results of testing and development showed the successful implementation of RME including e-recipe in the outpatient system, contributing factors: system integration, user-friendly interface, and technical support.
3	Guilcher et al. (2023)	This study used a rapid scoping review conducted following the JBI 2020 scoping review methodology guidelines and the World Health Organization guidelines for rapid reviews.	The research focused on exploring the effects of e-prescriptions and how to use the e-prescription system for opioids. The results showed that the implementation of e-prescriptions can reduce errors, contributing factors: warning features and a series of dose orders.
4	Almaghaslah et al. (2022)	This study used a cross-sectional approach to assess the digitization of prescription drugs implemented by Ministry of Health hospitals and primary healthcare centers in Saudi Arabia.	The focus of the study was patient experience and satisfaction. The results showed a moderate level of satisfaction with the successful implementation of e-prescriptions, contributing factors: internet access, devices, communication between doctors and pharmacists.
5	Aswinasih, Susanto and Hosizah (2020)	This study also uses an Action Research approach in optimizing electronic medical record data analysis using Business Intelligence in hospitals.	The research focused on system data analysis and optimization. The research showed the successful implementation of e-recipe in medical data analysis, contributing factors: use of BI, fast decision making, and operational efficiency.
6	Prasetyawati (2022)	This research utilizes a Mixed-Methods approach in assessing the usability and feasibility of the electronic medical record system concept as an educational portfolio.	The focus of the research was a usability and feasibility study of the system concept. The research shows the successful implementation of e-recipes as part of the education portfolio, contributing factors: system integration, educational relevance, and ease of use.

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No	Researcher Name and Year of Publication	Research Design	Focus of the Research
7	Pandi Astuti, Ratnasari and Kusumadewi (2019)	This study applies Use Case diagrams in the implementation of an electronic medical record system at Salatiga City Healthy Clinic.	The research focused on the design and implementation of the system in a healthy clinic. The study showed the successful implementation of e-represcription in the clinic, contributing factors: clear design, efficient workflow, and user participation.
8	Erawantini and Wibowo (2019)	This study uses the Parallel Implementation approach in the implementation of electronic medical records with a clinical decision support system.	The research focused on system implementation and evaluation. The study showed the successful implementation of e-prescription with clinical decision support system, contributing factors: fast decision making, data accuracy, and clinical support.
9	Ridwan and Sari (2021)	This study adopts the SDLC approach in the design of web-based electronic medical records at the Medical Rehabilitation Polyclinic of Cipto Mangunkusumo Hospital.	The research focused on the flow and procedures in system implementation. The study showed the successful implementation of e-reply in the polyclinic, contributing factors: structured development cycle, user feedback, and improved clinical efficiency.
10	Prasetyo and Lazuardi (2021)	This research uses a qualitative approach with a descriptive approach and a combination of Action Research and Prototype Development Methods in the design of Tablet PC-based electronic medical records to support maternal and child health services.	The research focused on the implementation of a tablet PC-based system design. The study showed the successful implementation of e-represents in maternal and child services, contributing factors: device portability, data accuracy, and improved health services.
11	Tominanto and Sari (2020)	The research design used is the creation of an electronic medical record application system.	The research focuses on the design of an electronic medical record application system with an emphasis on the implementation of e-prescriptions. The successful implementation of e-reports in the application system, contributing factors: efficient system design, user-friendly interface, and management support.

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No	Researcher Name and Year of Publication	Research Design	Focus of the Research
12	Nurhayati and Purnomosidhi (2018)	The research design involves problem identification, data collection, design, implementation, and testing in the creation of an electronic death data processing application system.	The research focused on the challenges and implementation of the data processing application. The research shows the implementation and success of e-recipe, including the challenges faced and solutions taken.
13	Apriliyani (2021)	The study used a qualitative approach to the creation of an electronic medical record application system.	The research focuses on the factors that influence the success of e-recipe implementation, contributing factors: management support, staff training, and technology infrastructure.
14	Meirina et al. (2022)	The research design adopts a qualitative method with a waterfall system creation model for the design and creation of an electronic medical record application system.	The research focuses on system implementation, including e-prescriptions. The positive impact of e-prescriptions on the efficiency and accuracy of drug prescription writing in hospitals.
15	Nurkalis and Nur Solikah (2024)	This study used a systematic review to assess the use of e-prescriptions in health facilities.	The research focused on the impact of e-recipe implementation. The research shows the success of e-recipe implementation in reducing errors. contributing factors: standard setting, system development.
16	Fadholi (2020)	This research design adopts the waterfall model in designing a web-based electronic medical record application system.	The focus of the research is on evaluating the performance of the web-based e-prescription system, including speed of access, ease of use, and integration with other health information systems.
17	Alfauzain et al. (2023)	This study uses a research and development approach in creating an electronic outpatient medical record filing information system.	The research focuses on analyzing the effectiveness of e-prescription implementation in the medical archiving process, including the long-term benefits for the clinic's operational efficiency.
18	Setiatin and Syahidin (2017)	This research design uses a waterfall model in designing an electronic-based inpatient medical record storage information system.	The research focuses on the successful storage and access of electronic prescription data in the context of inpatient medical records.

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No	Researcher Name and Year of Publication	Research Design	Focus of the Research
19	Gunarti, Wati and Amin (2021)	This study adopts the waterfall model in designing an electronic medical record information system in the medical records laboratory.	The focus of the research is on the determinants of successful implementation of e-prescriptions in medical laboratories, including its influence on the accuracy of laboratory test results and the process of sending results to doctors.
20	Prawiradirjo, Kartiko and Feoh (2018)	This research design uses the Systems Development Life Cycle (SDLC) approach in designing a web-based outpatient electronic medical record information system.	The research focuses on the implementation of e-prescriptions in a web-based outpatient electronic medical record system and its impact on clinic workflow.
21	Silalahi and Sinaga (2019)	This research design aims to describe the phenomenon by collecting descriptive data from primary sources through interviews, observation, and documentation. The researcher focused on describing the details and in-depth understanding of the implementation of electronic medical records in the clinic.	The research focuses on success factors and obstacles in the implementation of e-prescriptions in clinics, including analysis of user perceptions and patient satisfaction.
22	Santoso and Nova (2020)	This study involved analyzing previously collected data to evaluate the effect of Electronic Medical Administration Records (eMAR) and Computerized Physician Order Entry (CPOE) on patient safety culture in universal healthcare. This design takes data at a single point in time and analyzes it retrospectively.	The research focuses on the successful integration of e-prescriptions with eMAR and CPOE systems, and its impact on patient safety and adherence to treatment protocols.
23	Kapau and Kamang (2013)	This study used a descriptive approach to compile and develop an electronic database of patient medical records. Data was collected, analyzed, and presented to describe the current situation as well as the needs for the proposed system.	The focus of the research was the creation of an e-recipe system. The research shows the successful implementation of e-reply, and contributing factors: system efficiency, data management.
24	Windariyasih, Wasita and Feoh (2023)	This research design uses the system development life cycle, which includes the stages of planning, analysis, design,	The focus of the research was the creation of an e-recipe system. This research shows the successful implementation of e-recipe.

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No	Researcher Name and Year of Publication	Research Design	Focus of the Research
		implementation, and system maintenance. This research aims to develop an electronic medical record system that is responsive to mobile devices.	
25	Riyuska and Wildian (2016)	This research follows the waterfall model which is a sequential system development method. Each stage must be completed before the next stage begins, which includes requirements analysis, system design, implementation, testing, and maintenance.	The focus of the research was the creation of an e-recipe system. This research shows the successful implementation of e-recipe.
26	Utami and Nadjib (2019)	This study design utilized a systematic review of databases including ProQuest, Cochrane, PubMed, and Scopus. The keywords used were "electronic prescription", "electronic prescribing", "e-prescription", "e-prescribing", "patient safety", and "hospital".	The research focused on the impact of e-reports on patient safety. This study shows that the use of e-reports improves patient safety in hospitals.
27	Widiastuti and Dwiprahasto (2014)	This study is a descriptive study that uses statistical tests with Odds ratio.	The focus of the study was the role of e-reports. This study shows that the use of e-reports plays a role in reducing prescribing errors.
28	Roziqin et al. (2022)	The research design used the prototype development method, which involves creating an initial model (prototype) of the system that can be tested and adapted based on user feedback before full implementation.	The research focused on the creation of an RME system including e-recipes. This research shows the successful implementation of the e-recipe system.
29	Mutiara et al. (2014)	The research design utilized usability principles, which assess how well users can interact with a system, including aspects such as ease of use, efficiency, and user satisfaction.	The focus of the research was the creation of an e-recipe system. This research shows the successful implementation of e-recipe.
30	Putri and Gunawan (2022)	This study used a qualitative descriptive design with an analytical method to collect and analyze data regarding the transition process	The focus of the study was the readiness to use electronic medical records. This research shows the successful implementation of e-recipe.

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No	Researcher Name and Year of Publication	Research Design	Focus of the Research
		from manual to electronic medical records.	
31	Eryanan (2022)	This study used a descriptive design with a quantitative approach to collect and analyze statistical data related to the transition of medical record media from manual to electronic.	The research focused on readiness to use electronic medical records and implementation of e-prescriptions. This study shows the successful implementation of e-reports, contributing factors: technology, management policy.
32	Farid, Fernando and Sonia (2021)	This study uses a descriptive method with a qualitative approach to collect and analyze data on the effectiveness of using electronic medical records.	The focus of the study was readiness to use electronic medical records, successful implementation of e-prescriptions. This study shows the success of e-reply implementation, contributing factors: staff understanding, management, infrastructure.
33	Indrawati et al. (2020)	Descriptive qualitative analysis: This study used a descriptive qualitative analysis method to evaluate electronic medical records, focusing on data collection through interviews and observations.	The focus of the study was readiness to use electronic medical records, successful implementation of e-prescriptions. This study shows the success of e-reply implementation, contributing factors: technical support, training.
34	Faida and Ali (2021)	Quantitative with a cross-sectional approach: This study used a quantitative method with a cross-sectional approach to analyze the readiness of electronic medical record implementation, based on data collected from a survey.	The focus of the study was readiness to use electronic medical records, successful implementation of e-prescriptions. This study shows the successful implementation of e-reports, contributing factors: staff willingness, technology, management.
35	Sudirahayu and Harjoko (2017)	Qualitative with case study design: This study used a qualitative method with a case study design to analyze the readiness of electronic medical record implementation using the DOQ-IT approach.	The focus of the study was readiness to use electronic medical records, successful implementation of e-prescriptions. This study shows the success of e-prescription implementation, contributing factors: staff training, infrastructure, policy.
36	Wirajaya and Dewi (2020)	Cross-sectional study with quantitative and qualitative approaches: This study used a	The focus of the study was readiness to use electronic medical records, successful implementation of e-

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No	Researcher Name and Year of Publication	Research Design	Focus of the Research
		cross-sectional method combining quantitative and qualitative approaches to analyze the readiness to implement electronic medical records.	prescriptions. This study shows the success of e-reply implementation, contributing factors: staff training, management, infrastructure.
37	Pratama and Darnoto (2017)	Concurrent mixed-method with case study design: This study used a mixed-method with a case study approach to analyze the development strategy of electronic medical records.	The focus of the study was readiness to use electronic medical records, successful implementation of e-prescriptions. This study shows the success of e-reply implementation, contributing factors: staff training, policy, management.
38	Fitriyah (2022)	Mixed-method research with a case study design: This research uses a mixed-method with a case study design to analyze the readiness level of electronic signature implementation.	The focus of the study was readiness to use electronic medical records, successful implementation of e-prescriptions. This study showed successful implementation and improved efficiency and security.
39	Lestari, Nur'aeni and Sonia (2021)	Quantitative with a descriptive approach: This study uses a quantitative method with a descriptive approach to analyze the completeness of filling out inpatient electronic medical records.	The research focused on evaluating the completeness of data filling and the success of e-prescription implementation. The results showed that technology system support plays a role in the completeness and accuracy of medical record data.
40	Trianto and Rohaeni (2021)	Quantitative: This study used quantitative methods to analyze the compliance of inpatient electronic medical resume filling.	The focus of the study was on compliance in filling inpatient electronic medical resumes, successful implementation of e-reports, and contributing factors.

Source: Data Processed

Discussion

Santoso, Nuryati & Pramono (2020) used a research and development approach to create a software-as-a-Service (SaaS)-based electronic medical record system for independent practicing doctors. This study highlighted the successful implementation of e-reports by independent practice doctors. Factors contributing to the success include flexibility, ease of access, and low cost. SaaS systems allow doctors to access and manage medical records efficiently without a large initial investment in IT infrastructure. The study by Aprilisia, Amalia and Bachtiar (2021) used a waterfall model approach in the development of an outpatient information system and website-based electronic medical records. The implementation of e-prescriptions in the outpatient system showed significant success.

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Factors contributing to this success include good system integration, a friendly user interface, and adequate technical support. With an integrated system, the outpatient process becomes more efficient, and the user experience improves. Research conducted by Guilcher *et al.* (2023) used a rapid scoping review that was conducted following the JBI 2020 scoping examination methodology guidelines and the World Health Organization guidelines for rapid reviews. This study focused on exploring the effects of e-prescribing and how the use of an e-prescribing system for opioids affects experience and outcomes. Successful implementation of an e-prescription system can reduce errors. The presence of alert features and a series of dosing prompts allowed the system to reduce prescribing errors.

Almaghaslah et al. (2022) used a cross-sectional approach to assess the digitization of drug prescriptions implemented by Ministry of Health hospitals and primary healthcare centers in Saudi Arabia. The study focused on patient experience and satisfaction. The results showed that the implementation of e-prescriptions in the Ministry of Health hospitals and primary health care centers in Saudi Arabia provided a moderate level of satisfaction from patients. Smooth internet access, adequate devices, and good communication between doctors and pharmacists support the successful implementation of e-prescriptions. Aswinasih, Susanto and Hosizah (2020) used an action research approach to optimize electronic medical record data analysis using business intelligence (BI) in hospitals. BI enables fast decision-making and improves operational efficiency, leading to the successful implementation of e-prescriptions in medical data analysis. BI analyzes medical data in real-time, offering deeper insights and facilitating more timely and accurate decision-making.

Tominanto and Sari (2020) study focused on the design of electronic medical record application systems, with an emphasis on the implementation of e-prescriptions. They found that the main factors contributing to the successful implementation of e-prescriptions included efficient system design, a user-friendly interface, and strong management support. Nurhayati and Purnomosidhi (2018) study involved the entire software development cycle, from problem identification to testing, in the context of creating an electronic death data processing application. They discussed the challenges faced during the implementation of e-recipes and the solutions found to overcome the problems. Apriliyani (2021) study used a qualitative approach to develop an electronic medical record application system, focusing on the factors that influenced the successful implementation of e-prescriptions. They highlighted the importance of management support, staff training, and technological infrastructure in achieving the goal. Meirina et al. (2022) using a qualitative method with a waterfall model, this study discussed the implementation of e-reports in a hospital context. They found that e-prescriptions had a significant positive impact on the efficiency and accuracy of prescription writing. Nurkalis and Nur Solikah (2024) study used a systematic review to assess the use of e-reports in health facilities. The focus of the study was the impact of e-prescription implementation in health facilities. This study showed the success of e-prescription implementation in reducing errors. This successful implementation was supported by good standard setting and system development.

Utami and Nadjib (2019) used a systematic review research design from databases including ProQuest, Cochrane, PubMed, and Scopus. The study employed the keywords

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"electronic prescription," "e-prescription," "e-prescribing," "patient safety," and "hospital." The research focused on the impact of e-prescriptions on patient safety. This study demonstrates the successful use of the e-prescription system, which can improve patient safety in hospitals. Widiastuti and Dwiprahasto (2014) study was descriptive and used statistical tests with an odds ratio. This study focused on the role of e-reports. The results of this study show that the use of e-reports plays a role in reducing prescribing errors. Prescribing errors caused by decision-making errors by doctors can be reduced by the addition of e-prescription support systems, such as drug restrictions that should not be compounded, warnings against polypharmacy, or indications of drug interactions.

Roziqin *et al.* (2022) research employs the prototype development method, which entails the creation of an initial model (prototype) of an e-recipe system for testing and adaptation based on user feedback prior to full implementation. The results showed that this approach allowed for faster customization of the system and was responsive to users' real needs. Contributing factors identified include active user involvement in the development process and continuous iteration based on feedback. Mutiara et al. (2014) study uses usability principles to assess user interaction with the e-recipe system, focusing on ease of use, efficiency, and user satisfaction. The results showed that a system designed with usability in mind can increase user effectiveness and satisfaction. Contributing factors identified included intuitive interface design, system responsiveness, and effective user training. Putri and Gunawan (2022) study used a qualitative descriptive design with analytical methods to collect and analyze data regarding the process of switching from manual to electronic medical records. The study's main focus was on the readiness to use electronic medical records and the successful implementation of e-reports. The results showed that organizational readiness and staff training were important factors in the success of this transition. Contributing factors identified included management support, comprehensive training, and adjustments to operational procedures to accommodate the new system.

Research by Wirajaya and Dewi (2020) study used a cross-sectional method with quantitative and qualitative approaches to analyze the readiness of electronic medical record implementation. The main focus of the study was the readiness to use electronic medical records and the success of e-prescription implementation. The results showed that the integration of quantitative and qualitative approaches provided a comprehensive picture of organizational readiness, with factors such as staff training, management support, and technology infrastructure readiness contributing significantly to implementation success. Pratama and Darnoto (2017) study used a mixed-method with a case study approach to analyze electronic medical record development strategies. This approach combines quantitative and qualitative data to provide in-depth insights into the readiness to use electronic medical records and the success of e-prescription implementation. The study identified key factors such as training strategy, policy support, and change management as important elements contributing to successful system implementation. Fitriyah (2022) using a mixed-method with a case study design, this study analyzed the readiness level of electronic signature implementation in the electronic medical record system. The main focus was the readiness to use electronic medical records and the successful implementation of e-

prescriptions. The results showed that the implementation of electronic signatures improved efficiency and security in medical record management, with factors such as technology support, training, and user acceptance being the main contributors to success. Lestari, Nur'aeni and Sonia (2021) study uses a quantitative method with a descriptive approach to analyze the completeness of filling out inpatient electronic medical records. The main focus of the study was to evaluate the completeness of data filling and the success of e-prescription implementation. The results showed that factors such as staff training, periodic monitoring and evaluation, and technology system support play an important role in ensuring the completeness and accuracy of medical record data. Trianto and Rohaeni (2021) study uses quantitative methods to analyze compliance with filling out inpatient electronic medical resumes. The main focus of the study was to measure the level of compliance in filling out medical resumes and the successful implementation of e-reports. The results showed that filling compliance was influenced by factors such as continuous training, medical staff awareness, and technological support. High compliance contributes to the successful implementation of e-receipt and improved healthcare quality.

In the collection of research on electronic medical record (RME) implementation, there are a variety of models and methods used to build and test RME systems. In the 40 studies analyzed, some of the novelty models that can be identified include the development of a SaaS (software as a service) model for independent practicing doctors, the application of Internet of Things technology for the automation of dental intraoral photo recording, the optimization of RME data analysis using business intelligence, and the usability and feasibility study of the RME system concept as part of an educational portfolio. In addition, there is the use of new methods such as the concurrent mixed method, the mixed method with case study design, and the development of a tablet PC-based system to support maternal and child health services. With the variety of models and methods, these studies provide new insights into developing and applying RME in various clinical and educational contexts, referring to improving the quality of e-prescription services. The popularity of the e-prescription system increased significantly during the cross-COVID-19 pandemic. The high demand for drugs and the complexity of pharmacy management reinforce the need for an e-recipe system to improve efficiency in prescribing and drug preparation. An e-prescription system not only facilitates the direct prescription of drugs from doctors to pharmacists but also integrates with electronic medical records. This allows for comprehensive incorporation of patient data, including allergy history, drug interactions, and duplicate therapy. The popularity of e-prescribing systems is also driven by factors such as the ease of doctors' duties and responsibilities in prescribing drugs, an easier drug redemption process for patients, and a reduced chance of medical errors. Therefore, the implementation of e-prescribing systems has had a positive impact on improving the efficiency of drug prescribing, facilitating better healthcare for patients, and reducing the risk of medical errors. Therefore, the implementation of the e-prescription method can be an effective approach to optimizing the transformation of medical records from physical to electronic by utilizing the electronic prescription system as one of its components.

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The success of e-recipe implementation has been discussed in various studies, each highlighting factors that contribute to success. Here is a summary of those factors based on the results of various studies:

1. Efficient system design and user-friendly interface are important factors. An intuitive system makes it easier for users to adopt new technology without significant difficulty (Fitriyah, 2022; Tominanto & Sari, 2020).
2. Support from management is critical to successful implementation. This includes a commitment to provide the necessary resources, supportive policies, and incentives to encourage the adoption of new systems (Apriliyani, 2021; Putri & Gunawan, 2022; Wirajaya & Dewi, 2020).
3. Adequate training ensures that staff understand how to use the new system effectively. Ongoing training programs help staff remain competent and confident in using e-reports (Apriliyani, 2021; Trianto & Rohaeni, 2021).
4. Good technological infrastructure, including reliable hardware and software, is fundamental to the successful implementation of e-reports. A stable internet connection and a system that is well integrated with other health information systems are also important factors (Fadholi, 2020; Faida & Ali, 2021).
5. Active involvement of users in the system development and implementation process ensures that their needs and feedback are considered. This increases the likelihood of successful adoption and use (Pratama & Darnoto, 2017; Roziqin et al., 2022).
6. The use of an appropriate system development model, such as SDLC, Waterfall, or prototyping, helps in ensuring that all stages of development are done well. Each model has advantages in different contexts, but all emphasize the importance of structured planning, design, implementation, and maintenance (Febrianti et al., 2020).
7. Regular evaluation and maintenance of the system ensures that the system continues to function properly and in accordance with evolving needs. Continuous improvement based on user feedback helps in maintaining the success of the implementation (Lestari et al., 2021; Windariyasih et al., 2023).
8. Adherence to established procedures and protocols for the use of e-prescriptions, as well as consistent monitoring, helps in ensuring that the system is used in the correct and optimal way. It also helps in identifying and addressing problems early on (Sudirahayu & Harjoko, 2017; Trianto & Rohaeni, 2021).
9. Users' positive perceptions of the e-recipe system, influenced by ease of use and perceived benefits, contribute significantly to implementation success. High user satisfaction is often directly proportional to higher adoption rates (Farid et al., 2021; Silalahi & Sinaga, 2019).

The successful implementation of an e-reply depends on a combination of factors, including good system design, management support, adequate training, robust infrastructure, user participation, appropriate development strategies, continuous evaluation, adherence to procedures, and positive user perception. Each factor plays an important role in ensuring that an e-prescription system can be adopted and used effectively in daily medical practice.

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CONCLUSION

The successful implementation of e-reports is highly dependent on various interrelated factors. Efficient and user-friendly system design, strong management support, and continuous staff training and education are key elements that ensure that users can adopt this technology easily and effectively. The optimal operation of the system also depends on adequate technological infrastructure and active user participation in the development and implementation process. The use of appropriate system development models, such as SDLC or Waterfall, helps to execute each stage of development properly. In addition, ongoing evaluation and maintenance, monitoring compliance with procedures, positive perceptions, and user satisfaction all contribute to the successful implementation of e-recipe. By paying attention to and integrating all these factors, e-prescription implementation can run smoothly, improve efficiency, reduce medical errors, and ultimately improve the quality of healthcare. To ensure the successful implementation of e-recipes, several important recommendations need to be considered. First, the system design should be efficient and user-friendly to make it easier for users to adopt the new technology. Management support is crucial, including commitment to providing the necessary resources and supportive policies. Regular staff training and education should be conducted to ensure that all users understand and are able to use the system effectively. Adequate technological infrastructure, including reliable hardware and software, should also be set up to support e-reply operations. Active participation of users in the development and implementation of the system is necessary to ensure that it meets their needs. The use of an appropriate system development model, such as SDLC, waterfall, or prototyping, will help in ensuring that each stage of development is done well. Ongoing evaluation and maintenance are essential to ensure that the system continues to function properly and can be improved as needed. Monitoring and adherence to established procedures should be closely monitored to ensure correct and optimal use. Finally, it is important to build users' positive perception and satisfaction with the e-recipe system through clear communication of benefits and their involvement in the development process so that the system's adoption rate can be increased.

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