Medical Data Collection
Sample Work

A Comprehensive Review Of Medical Data Collection Systems For Efficient Patient Health Care

Abstract

Background: Implementing precise data management systems ensures the secure and effective movement of sensitive healthcare data. However, medical practitioners neglected their critical role in medical data processing. As a result, implementing high-quality electronic health record (EHR) software in health care is critical for reducing medical mistakes. As a result, the purpose of this study is to highlight the roles of EHR in promoting quality healthcare service provision.

Methods: EHR, EMR, medical data processing, medical data retention, medical data collection, medical data deletion, health care, and patient care were among the keywords found, as were a few related phrases in various combinations. To find publications from those databases, we utilized PubMed (National Library of Medicine), Google Scholar, and the Google search engine. All [All fields] and [MeSH Terms] searching techniques were used, as well as boolean terms "AND", "OR", and "NOT".

Results: Articles were screened based on their title and abstract, and the remaining associated full-text resources were included or omitted by two persons who decided their eligibility. Finally, 73 materials published between 2013 and 2018 were used to qualitatively synthesize and reconcile the idea for this systematic review study.

Conclusion: Inadequate medical data processing systems mostly cause medical mistakes. Using standardized data management systems reduces mistakes and their consequences. As a result, integrating electronic tools in a healthcare facility assures secure and effective data handling. As a result, it is critical to build proper medical data management systems in order to provide effective health care.

Keywords: electronic medical data, health care data, medical data processing, data management systems, electronic health record (EHR), patient care, animal data, plant data, data privacy, health care technologies, spiritual, psychological

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INTRODUCTION

The aim of healthcare facilities, which is to restore patients' health, necessitates the use of effective and efficient medical data for evidence-based intervention. Installing an adequate healthcare data management system with correct case definition enables fast data extraction,2 enhances communication for clinical decision-making in medical practice,2-8, and clinical research,9,10, and improves healthcare service quality.11 Healthcare personnel are eager to enhance the recording, distribution, monitoring, and implementation of preventative interventions in order to reduce morbidity.12 This necessitates continuous, thorough, comprehensive, and reliable information, which garners more attention in the healthcare business.3

To maintain patient data, the healthcare business uses a paper-based record (PBR) and electronic health record (EHR) system. The EHR has become an essential component of medical care13, transforming health treatment service quality 14,15, increasing clinician satisfaction and facilitating patient decision-making.8,16 Accurate information from EHR enables physicians to enter orders and assess clinical validity, which improves patient care quality.17 This capacity is critical for diagnosis and treatment,15 and it also assists medical and legal activities.18

Patient data from the EHR system were easily available and transferable21. Minimizing access time and utilization, this aids in accurate diagnosis and decision making 22.1,2 Notification signal flags (BPAs) ask regarding "what content" and "with whom" to share 23-25, triggering probable adverse events (AEs) via clearly recognized displays that warn patient records reviewers.26 This improves patient participation in health care service provision 27 and decision-making processes 28 by fostering trust 29 and confidence 30, which aids in the identification of specific and actionable adherence hurdles.31 Furthermore, automatic email, text, and phone reminders may be issued to patients to incentivize and enhance compliance.32

The EHR program improves the patient care delivery process,36 trustworthiness, safety, and efficiency.29 As a result, establishing standardized rules, methods, and procedures for an adequate healthcare data management system that advances the quality of health services and efficiency,34,37 eliminates non-value-added activities,34 and assures significant quality and safety improvement,34 is critical.16,17,23,34 As a result, the purpose of this study is to highlight the roles of EHR in increasing the quality of health care service.

Methods

With various combinations, the keywords detected were EHR, EMR, electronic health record, electronic medical record, medical data recording, medical data processing, medical data retention, medical data deletion, health care, patient care, animal data, and plant data. The search terms "AND", "OR", and "NOT" were used.

We used [((EHR OR EHR[MeSH Terms]) OR EMR] OR (EMR[MeSH Terms]) OR (electronic health record) OR (electronic health record[MeSH Terms]) OR (electronic medical record) OR (medical data recording[MeSH Terms]) OR (medical data retention) OR (medical data retention[MeSH Terms]) OR (medical data destruction] OR (medical data destruction[M AND [((health care) OR (health care)[MeSH Terms]) OR (patient care) OR (patient care)[MeSH terms]) OR (patient care)[MeSH Terms])] to search PubMed and Google Scholar databases for articles.

Result

EndNote® Version X5 for Windows program was used to download published papers from the PubMed (National Library of Medicine [NLM]) and Google Scholar databases, as well as the Google search engine. Published materials that were found using the EndNote program were then filtered and verified for relevancy using titles, abstracts, and full-text articles, which were done separately by two people. After clearing the following screening, selection, and verifying processes, 73 full-text documents issued from 2013 to 2018 were selected for the production of this study from a total of 4,606 searched published resources. The information derived from the referred materials was qualitatively synthesized, and the concept was reconciled to create this review paper. The whole study selection procedure is shown in Figure 1.
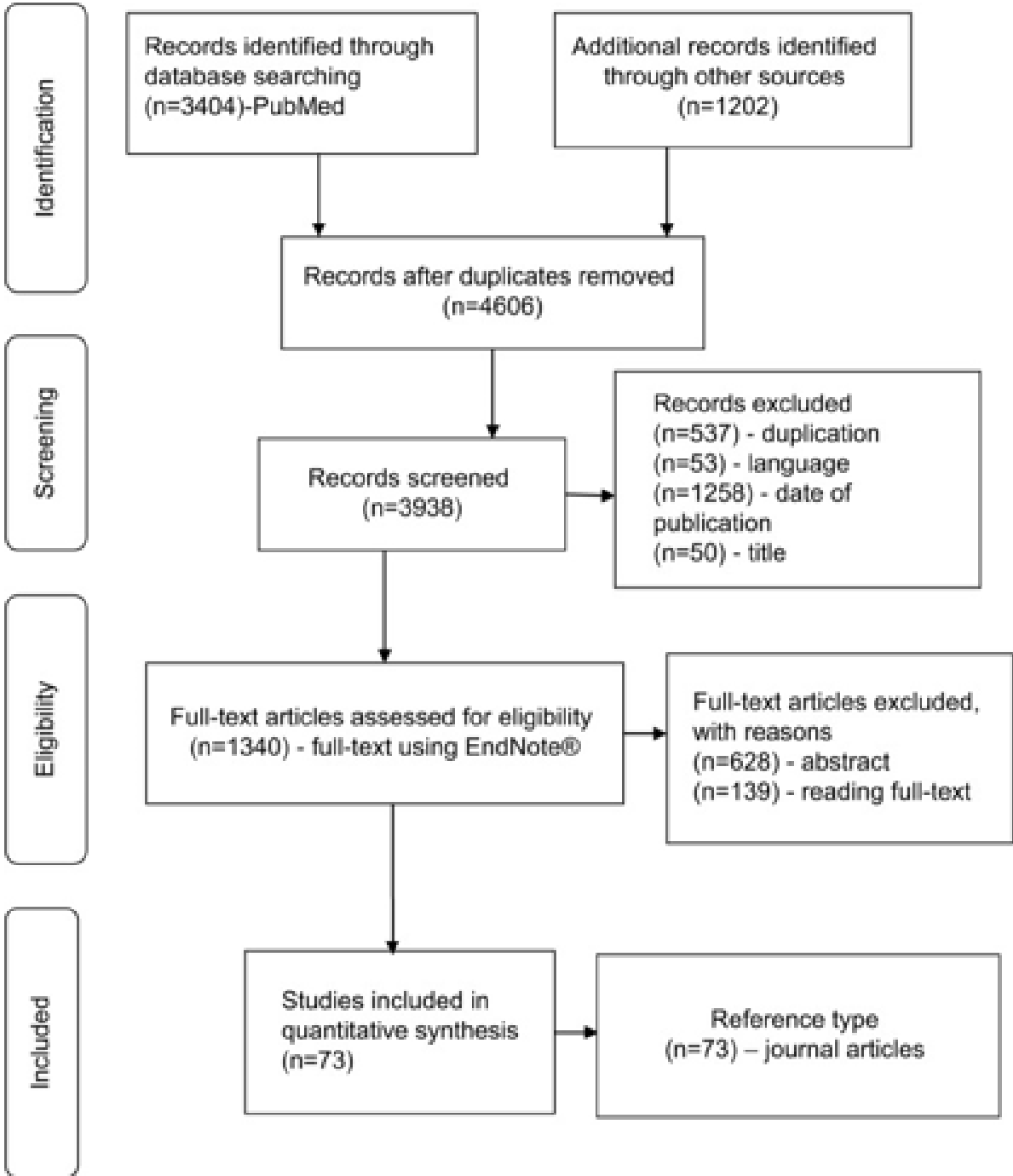
Discussion

Processes for managing patient healthcare data

Despite the fact that the healthcare sector is an information enterprise, data recording procedures and data privacy legislation differ greatly between institutions and nations.[38],[39] Overall, healthcare data management rules must establish confidentiality and prohibit rebuilding after destruction under the supervision of security personnel.

The document destruction policy must specify the medical data retention policy and its norms of practice, which must include the benefits and drawbacks of destroying or retaining medical data.[40]

The Advantages of EHR Implementation

Implementing EHR increases the quality of services and ensures the safety of patients upon using decision-support tools, resulting in error-reduced services that increase clinicians' and patient's satisfaction, which in turn increases the healthcare seeking-behavior of clients.

Currently, over 1,000 EHR apps are launched each month [42] with the goal of enhancing performance, decreasing fatigue, improving accessibility, assuring compliance, integrity, and satisfaction, and achieving acceptable safety improvements.[44]

The EHR tool was successfully deployed in the United States and the United Kingdom, which have the world's largest private and public health care systems, respectively, and has resulted in high-quality patient care.[45] It is a critical instrument for implementing current information technology to improve the quality of health care services [46] in accordance with medico-legal issues.[18]

Access to the EHR tool improves health care delivery,[19],[24] leads to more correct decisions,[22] and adds to health care quality improvement and research output [47],[48] at a lower cost.[49],[50] The technology also facilitates the secure transmission of health care data that matches the patient's expectations, [51] promotes the continuity of patient care,[11] and assures medication adherence compliance.[52],[53] Furthermore, the tool aids in the attainment of diabetic goals, while non-physician personnel assist in the service delivery process.[54]

Healthcare service at a distance

Traditional telephone services were a watershed moment in contemporary telemedicine. Implementing electronic communication applications with high processing power allows for remote control of processes. Despite the fact that eliminating medical mistakes is a global priority, clinicians continue to make various sorts of errors during manual medical data processing experienced when capturing and failing to record healthcare data timely.35 Errors in medical data are prevalent and expensive. However, the technology's social, spiritual, psychological, and ethical implications, as well as its technical feasibility, must be examined, and all stakeholders must contribute when designing and implementing new healthcare technologies. Although PBR systems are more error-prone, just replacing the system with EHR cannot guarantee accuracy.34 As a result, efficient processing, usage, and storage of medical data are important for both clinical and public health decisions.

The future perspectives

The promising EHR implementation systems, people, processes, and product elements all play a part in its success.11 Stakeholders gain from systems that address patients' needs while also protecting their privacy.24 Access to precise and full clinical information is the most important component in making sound decisions.69 This is assisted by decision-support EHR tools, known as BPAs, which are created for behavioral health integration with the demands of healthcare institutions and the advantages of improved patient experiences, such as alcohol use.30 As input, the system may be used to update a patient's current status in order to acquire a matching suggestion for medical testing, suspected diagnoses, and treatment options.69 According to research, the EHR "active choice" considerably enhanced influenza vaccination rates and ordering of colonoscopy and mammography screening services.

In addition, the authors have noted two difficulties that require the researcher's attention for more developed causes for doubts. First, one national study found that EHR adoption was greater in rural practices than in urban practices, reversing previous patterns.72 Another study found that it is critical to consider the patient's behavioural characteristics while utilizing the tool during patient rendering operations in order to boost the patient's involvement level.73 These challenges may necessitate the involvement of behavioural scientists in addressing this specific patient concern.

Conclusions

One of the most fundamental jobs of healthcare providers is medical data processing. Using integrated memory help, computerized physician order input programs with decision-support fields prevent unnecessary medical mistakes. These automated notification alarm signals allow for appropriate and prompt response, resulting in safer and more efficient health care. To preserve secrecy, electronic technology design regulations must adhere to predefined norms and principles. User-friendly technology guarantees the effective and timely transfer of healthcare data in order to provide excellent patient care that meets the demands of both the patients and the organization.

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