IMPACT OF IMPLEMENTING CLINICAL NOTES TEMPLATES ON THE QUALITY AND CONSISTENCY OF MEDICAL DOCUMENTATION

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Abstract

Although there have been significant advancements in electronic health records (EHRs) in the last 25 years, there are still ongoing difficulties in implementing and using them, and the advantages achieved are not meeting expectations. The objective of this scoping assessment was to provide a comprehensive overview of the existing understanding of the impact of electronic health record (EHR) installation and the obstacles hindering the acceptance and use of EHRs. A systematic literature search was performed in the databases PubMed, Web of Science, and ACM Digital Library. Both beneficial and detrimental consequences of EHR deployment were observed, pertaining to clinical tasks, data and information management, patient care, and economic ramifications. The main challenges to acceptance and usage that were regularly seen were limited resources, inadequate training and technical assistance for users, as well as low literacy and technological abilities. While this review did not do a thorough investigation of the quality of the articles included, it did find a lack of consistency in the use of EHR terminology and the absence of specific contextual information about the research settings.

Keywords: electronic health record; personal health record; scoping review; implementation; adoption

1. Introduction

During the early 1990s, there was a movement towards replacing paper-based health records with electronic data. This transition was driven by advancements in technology and the support of the Institute of Medicine in the United States [1,2]. Due to the shortcomings of paper-based health records becoming more apparent in the healthcare business, electronic records have been continuously researched and envisioned over the last 25 years, with several anticipated advantages.

Throughout the course of nearly 25 years, the terminology and nomenclature associated with electronic records have undergone repeated changes, although the fundamental principle has remained unchanged [4]. Currently, the term "electronic health record" (EHR) is often used to

refer to records that have been embraced by physicians [4]. Nevertheless, in several nations, there is a spectrum that encompasses both the rigid perspectives of the EHR and PHR. This spectrum pertains to the authority that governs the record and its contents, as well as the connected PHRs. In the latter scenario, the care provider gives the patient access to the Electronic Health Record (EHR) without the patient having authority over it. This access capability is often included as a component of a patient portal.

Around 25 years after the introduction of EHRs, significant advancements have been achieved in terms of EHR deployment, uptake, and use [2]. Regrettably, this has mostly occurred in a disorganized manner rather than with a synchronized and rational approach. Several of the early anticipations about time efficiency, productivity, and improved quality of treatment have not been fulfilled or have only been partly achieved, and "current Electronic Health Records (EHRs) still fail to meet the demands of the present rapidly evolving healthcare landscape" [2]. Data duplication is a prominent problem, despite the expectation that it would be resolved by the use of Electronic Health Records (EHRs) [7,8,9]. Significant progress in the construction of legislative frameworks for patient privacy and confidentiality surrounding EHR data has only occurred lately [2,10,11]. The ongoing development of standards for Electronic Health Record (EHR) data has enhanced the capacity to interchange data, use data for secondary purposes, and provide decision assistance [2,12].

Although there have been advancements in the techniques of installation and the use of electronic health records (EHRs), the actual realization of advantages is still falling short of expectations. Clinicians have significant obstacles as end users of EHRs, which limit their ability to effectively support clinical activities and enhance the quality of patient care [13]. The question of whether the use of Electronic Health Records (EHRs) enhances efficiency, namely in terms of time-saving for physicians, remains a subject of controversy [2]. Although there are proponents of the idea that the use of Electronic Health Records (EHRs) has enhanced patient care, more efforts are required to address the remaining challenges. Specifically, there is a need to identify the intricate process that underlies the assessment of patient outcomes in relation to the installation of EHRs in order to arrive at a more certain conclusion [14]. The objective of the research is to examine the available literature and gather up-to-date information on the impact of EHR implementation and the obstacles to EHR acceptance and use.

2. Impacts of Electronic Health Record (EHR) Implementation

The research revealed both good and negative impacts associated with the work of healthcare providers/staff, data and information, patient care, and economic impact, as seen in Figure 2.
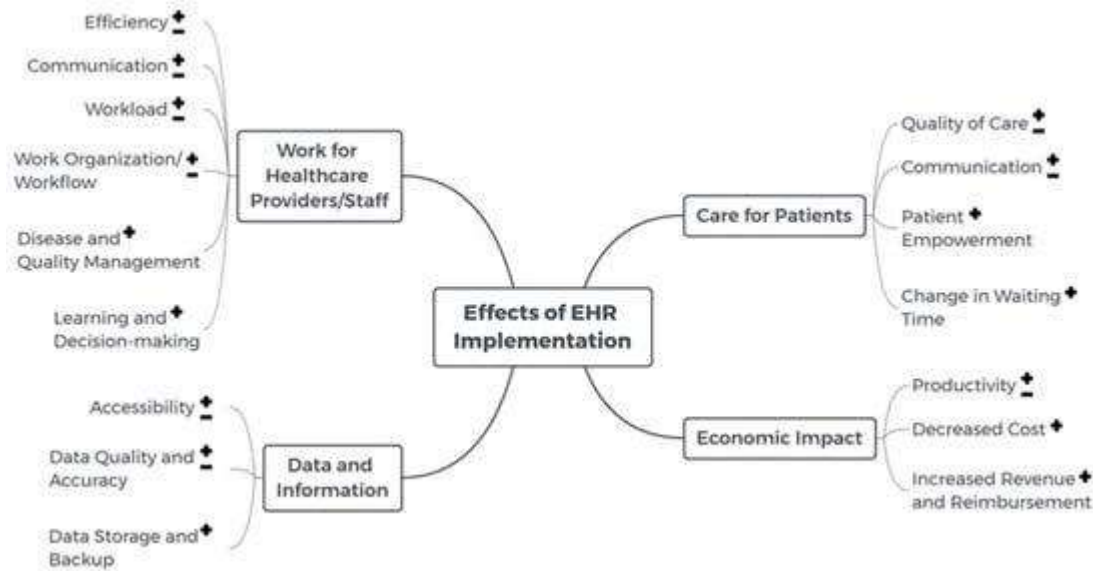
Efficiency +
Communication +
Workload +
Work Organization/ +
Workflow −
Disease and +
Quality Management
Learning and +
Decision-making

Work for Healthcare Providers/Staff

Accessibility +
Data Quality and +
Accuracy
Data Storage and +
Backup

Data and Information

Effects of EHR Implementation

Care for Patients
Quality of Care +
Communication +
Patient +
Empowerment
Change in Waiting +
Time

Economic Impact
Productivity +
Decreased Cost +
Increased Revenue +
and Reimbursement

Figure 2. A mind map illustrating the positive (+) and negative (−) consequences of using electronic health records (EHR).

3. Employment opportunity available for those in the healthcare industry

The installation of EHR was considered to have led to enhanced efficiency, as doctors found the commonly utilized EHR capabilities to be beneficial for boosting their job efficiency [15]. The study identified improvements in overall workflow efficiency [27] and laboratory turnaround time [16]. Specifically, the elimination of time-consuming activities associated with paper-based records was shown to contribute to these benefits [17,18,19]. A research found that the introduction of electronic health records (EHR) did not have a significant impact on the duration of time specialist doctors spent with individual patients [20]. A separate time-motion observation research shown a significant decrease in the amount of time nurses spend on administrative duties after the deployment of electronic health records (EHR) [21]. Clinicians and staff have reported enhanced efficiency due to the rapid retrieval of information in electronic health records (EHRs), as well as a decrease in documentation time, achieved via the use of EHR templates [22-28].

Templates in Electronic Health Records (EHRs) were shown to be advantageous [29] as they significantly reduced the time required for documentation [30]. An observational research, which analyzed data on the utilization of electronic health records (EHR), indicated that doctors were able to finish their notes more quickly after the deployment of EHR (with an average completion time of 10-24 hours) compared to the period before EHR was used (with completion times ranging from 600 to 1200 hours) [31]. A research [25] revealed significant declines in the percentage of physicians who agreed that EHRs led to lengthier patient visits. The proportion decreased from 68% at month 1 post-EHR to 51% at month 12 post-EHR (p = 0.001). A different research found that nurses generally had favorable opinions of electronic health records (EHRs) in terms of their perceived usefulness, system quality, and satisfaction [32].

The remark of inefficiency resulting from the introduction of Electronic Health Records (EHRs) was made. The widespread use of Electronic Health Records (EHRs) at every stage of the healthcare process led to healthcare practitioners dedicating a greater amount of time to utilizing EHRs throughout their work shifts [20,28]. Healthcare providers said that accessing and finding essential information in electronic health records (EHRs) was challenging [33] and time-consuming, leading to decreased efficiency [33,34,35]. Medical professionals voiced apprehension and dissatisfaction regarding the sluggishness of systems [36,37,38] and the laborious process of documenting patient information using electronic health records (EHRs) [23,34,38,40]. In a survey, 81.8% of the participating physicians agreed that "paper documentation is faster than using EHRs" [39]. A different poll indicated that 71% of the doctors who participated observed a rise in the amount of time they spent on patient documentation after the introduction of electronic health records (EHRs) [17].

Two time-motion studies yielded comparable results, suggesting that nurses devoted a considerably greater amount of time (p < 0.05) and proportion of time (p = 0.002) to documentation after the deployment of electronic health records (EHR) [22,41]. Two other studies revealed that a considerably higher number of doctors reported inadequate or barely enough time for documentation in settings with electronic health records (EHRs) compared to non-EHR settings (46.4% vs 13.6%, p < 0.001) [42]. Furthermore, 32.8% of nurses reported an insufficient amount of time for documentation [43].

A comprehensive literature analysis determined that practitioners who work in settings with electronic health records (EHR) spend a greater amount of their time on documentation compared to those without EHR. This difference is particularly substantial for nurses, as supported by statistical evidence [44]. The introduction of EHRs resulted in a notable decline in efficiency, namely an increase in surgical case turnover time, which lasted for a period of five months [45]. From a usability and functionality standpoint, the absence of essential features in Electronic Health Records (EHRs) that facilitate the workflow of the entire care team, such as the ability to exchange laboratory results and medication lists, as well as tools for managing chronic diseases and preventive care, resulted in additional steps in the workflow and decreased efficiency [29,40,44]. Two studies [43,44] found that job productivity was severely impacted by other design elements of EHRs, such as the absence of templates and the inability to reuse existing information, as well as poorly designed interfaces. A research conducted in Finland found that there were no significant improvements in doctors' evaluations of their Electronic Health Records (EHRs) from 2010 to 2014. However, the findings revealed significant issues and shortcomings that greatly impeded the effectiveness of EHR use [46].

4. Data and information

Enhanced availability of patient information and records was identified as a positive outcome after the deployment of electronic health record/personal health record systems [17,34,37,45,47]. Nurses believed that improved accessibility positively impacted their work performance [20,28].

The prompt and efficient retrieval of information, such as laboratory results, radiological pictures, and medication history, was identified as a factor that aids and expedites care operations. Furthermore, the use of EHRs was shown to have the advantage of enhanced accessibility, since it allows for simultaneous access to patient data [20,28,42,44]. However, a research found that the percentage of doctors who believed that electronic health records (EHRs) enhanced the availability of clinical information remained consistent, ranging from 92% to 95%, across the first to twelfth month after implementing EHRs [25].

Nevertheless, studies undertaken at other primary care and residential aged care institutions have indicated an improvement in accessibility [38,42]. A survey found that 81% of the doctors who participated reported experiencing enhanced remote access to patient information [46]. Furthermore, an additional research noted that the enhanced availability, which enabled doctors to practice outside of medical facilities, may be seen as an added advantage resulting from the introduction of electronic health records [17]. However, the accessibility of electronic health records (EHRs) may be compromised, since clinicians have indicated that only a limited amount of information may be retrieved from them [43]. In a subsequent interview performed after the deployment of electronic health records (EHR), it was revealed that doctors had difficulties in finding and accessing information due to the presence of data silos [40]. The clinicians' impression of the ease of accessing patient information declined significantly (from 80.18% to 64.13%, $p < 0.01$) after transitioning to a commercial Electronic Health Record (EHR) system. The findings of a questionnaire survey conducted on a sample of doctors revealed that a significant proportion of respondents (34.7%) disagreed with the notion that accessing earlier notes was straightforward, while a similar percentage (32.7%) expressed difficulty in accessing patient prescription lists. Furthermore, a substantial majority (79.2%) found it challenging to review lab results [39].

5. Summary

The literature study on the subject indicated inconclusive results on the impact of EHR deployments and the persistent obstacles to EHR acceptance and use. While beneficial impacts seemed to have grown with time, negative consequences including increased effort and dysfunctional workflows were consistent. Furthermore, the review lacked a thorough evaluation of the articles included, exhibited inconsistency in the definitions of EHRs, and provided insufficient contextual information on the research settings.

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