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Review

Electronic Medical Record and Smoking Cessation Activities: Literature Review

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Abstract: Vital information regarding the life and health of a patient is gathered in medical records. The electronic medical record (EMR) is the product of medical record information technology development. Electronic health records and other health information systems have the potential to be useful tools for raising the caliber and efficacy of clinical interventions aimed at reducing tobacco consumption. Electronic medical records are used by doctors, clinics, and health care organizations to track patient smoking cessation outcomes and as a smoking cessation support tool. Thirteen papers from the Google Schoolar database and the reference lists of the included research were used in the review. We looked for research that was written between 2010 and 2020. Overall, these trials discovered that only slight benefits were made by several doctor-recommended therapies related to tobacco use. Following modifications to electronic medical records intended to speed up the collection and management of tobacco use during medical visits, there seems to have been a rise in the documentation of tobacco status and referrals for cessation counseling. To maximize the potential of EMRs for extra therapeutic advantages and smoking cessation in hospital settings, more research is required.

Keywords: counseling; medical record; physicians; smoking cessation

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1. Introduction

Worldwide, tobacco usage continues to be one of the main issues for public health [1], with grave implications for global health and well-being. Despite advances in tobacco control with policies supported by the World Health Organization (WHO) Framework Conventions, 19% of the world's population is currently recorded as smoking and causing 8 million deaths annually [2]. Every year, tobacco products claim the lives of around 7 million people, or roughly half of their users [3]. If this is left unaddressed, the number of tobacco-related deaths is predicted to reach 8.3 million by 2030 [4]. Almost 80% of the 1.1 billion smokers worldwide live in middle-income countries, and these countries are where the burden of tobacco-related diseases and deaths is highest [3]. A comprehensive tobacco control initiative should encompass provisions for aiding current smokers in ceasing their tobacco consumption, as this will contribute to diminishing the prevalence of ailments and subsequently ameliorate public health [5], by being able to halve the use of tobacco products among adults in the world from total smoking, it is predicted that it will be able to prevent 180 million deaths by 2050 [6].

These alarming statistics reveal the persistent challenges posed by tobacco use on a global scale. They emphasize the need for continued efforts and more effective interventions to combat this major public health problem, safeguarding the health and well-being of individuals worldwide. The battle against tobacco's harmful effects remains

a critical priority for public health organizations, goverments, and communities around the world.

In developing countries, health facilities are still a place that is used to provide smoking cessation assistance after quitting smoking [7]. In recognition of this, the Framework Convention on Tobacco Control of the World Health Organization (WHO) focuses significant emphasis on promoting the use of scientifically validated tobacco cessation techniques as well as the dissemination of comprehensive recommendations and best practices. These evidence-based clinical practice guidelines can be employed by health care policymakers to aid smokers in their cessation efforts, utilizing already existing strategies. [8], [9].

Quitting smoking has a significant effect on overall health, as it reduces the risk of developing disease, increases the duration of life, and overall improves the health-promoting functioning of society [10], [11]. Patient attempts to quit smoking were found to be greatly enhanced by physician counseling, according to a meta-analysis of 17 randomized trials. It has been demonstrated that even relatively small counseling efforts by medical professionals can boost patients' attempts to stop smoking. Because of this, it is now considered "standard of care" for medical practitioners to be able to counsel patients on the advantages of quitting as well as effective methods of doing so [12]. To increase adoption of standards, governments should provide the facilities and resources necessary to record information about smoking rates and interventions in electronic medical registers (EMRs). Additionally, they must ensure that the data entered into the EMR is properly documented [13]. Electronic Medical Records (EMR) refers to the digital version of a patient's paper chart in a healthcare environment. These records contain a comprehensive history of the patient's medical and treatment information, including demographics, progress notes, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports. EMRs are designed to facilitate the exchange of patient information among healthcare providers and organizations. They aim to improve the overall quality of healthcare by improving communication and coordination among healthcare professionals [14].

Large-scale investments have been made in several countries regarding the technology for patient monitoring via computers. One of the main benefits of electronic health records (EHRs) is that they can be used to inform physicians, hospital staff, or other providers of healthcare services about patients' use of tobacco. They can also provide information about how to properly treat smoking, prescribe medication, and assist in making decisions regarding smoking. They can also assist people in adjusting to the new, enhanced smoking service, which can be used to improve some of the clinical performance's shortcomings. Additionally, EHR can assist in improving the practice of maintaining a tobacco standard by providing electronic resources for the maintenance service (for example, a teleport or other instrument). Several studies that we discuss here highlight various recommendations that can be made for patients who wish to maintain their health by using an EMR or EHR as a guide. In particular, changes made to the Electronic Health Record (EHR) aim to increase the number of patient records and referrals to consultants in order to achieve better patient outcomes. However, a few of these studies do not refute or indicate that there is an increase in the number of people who are smoking-quit.

Systems for health information such as electronic health records (EHRs), computerized patient monitoring systems, and electronic records are considered valuable resources that can be used to improve patient care quality and efficiency. EHRs are likely to spread rapidly, at least in developed countries, if the healthcare system is experienced in paper form.

In healthcare settings, electronic medical records (EMR) can help save time, space, and money, and improve the quality of care [15], [16]. Furthermore, prior research has demonstrated that the electrocardiogram (EMR) is a useful technique and instrument for identifying people who are at risk of diabetes and coronary heart disease as well as for

enhancing their utilization of healthcare services [17]. Based on the demonstrated benefits of EMR for other chronic diseases, using this technology to intervene and, of course, as a promotive or curative measure with patients with tobacco dependence, which in turn can produce substantial health benefits.

Previously, research has shown that the use of modified EMRs can help doctors or nurses identify a patient's level of nicotine use and provide counseling assistance [18], [19]. Although counseling assistance increased when EMR was modified with tobacco features, no increase in prescribing was noted [19]. Limited information regarding the length of the intervention process and how many appointments are scheduled for counseling in tobacco dependent patients can be easily managed in this EMR application.

Lawmakers, smoking reduction advocates, and insurance companies will be interested in the analysis presented here. More sophisticated information systems will eventually lead to better health behaviors and outcomes, according to the logical model of the EMR Meaningful Use program. Counseling and treatment for smoking cessation provide an easily visible evaluation if well documented. By using a modified EMR to assist with counseling documentation, smoking cessation efforts have always been successful. In a recently published review by Cochrane, 16 studies that provided support for EMRs as a means of smoking cessation showed that EMRs slightly improved documentation and treatment tobacco use [20]. The increase in the cost of fire insurance is correlated with the number of fire insurance policies that they provide, which benefits insurance companies by increasing their effectiveness as an intervention to help with fire insurance. If ministry of energy and mineral resources in Indonesia (ESDM) proves to be an effective solution, the advocates' willingness to apply advice and counsel more broadly in this and other situations can be increased.

This research aims to examine how physicians, clinics, and health care delivery systems use electronic medical records to support patients in quitting smoking, as well as the effects of this practice on patient outcomes. The novelty of this research is exploring the concept of developing integrated protocols in EMR to guide health professionals in providing more coordinated and effective smoking cessation services and broadening the view by highlighting user perspectives, both from the side of health professionals and patients, regarding the use of EMR in the context of smoking cessation. This research will provide new insight into how EMR can make a significant contribution to global efforts to reduce smoking prevalence, with the hope of creating a strong foundation for the development of more effective smoking cessation strategies in the future.

2. Materials and Methods

This study was a review of narratives. The Google Scholar database and the bibliographic reference lists of the included research were among the sources we searched. Our search yielded studies released in the years 2010–2020. We selected the search terms "Smoking Cessation," "Electronic Health Record," and "Electronic Medical Record" to facilitate the download of the study papers. We were able to acquire 2.252 articles in the beginning. These thirteen items are thought to be pertinent.

The manuscript must also contain sufficient details. Quality assessment was applied during abstract and full-text review. In the methodology, the author/review team first uses search criteria, along with inclusion and exclusion criteria. The final selection of the study is to carry out an assessment using instruments from JBI and the PRISMA checklist [21], [22], dan and any differences or problems in the assessment are resolved through discussion between the three independent reviewers who carried out the assessment . The tool used for sharing data is the Mendeley library by forming a collaboration group with the authors. The stages of manuscript selection are shown in Figure 1.

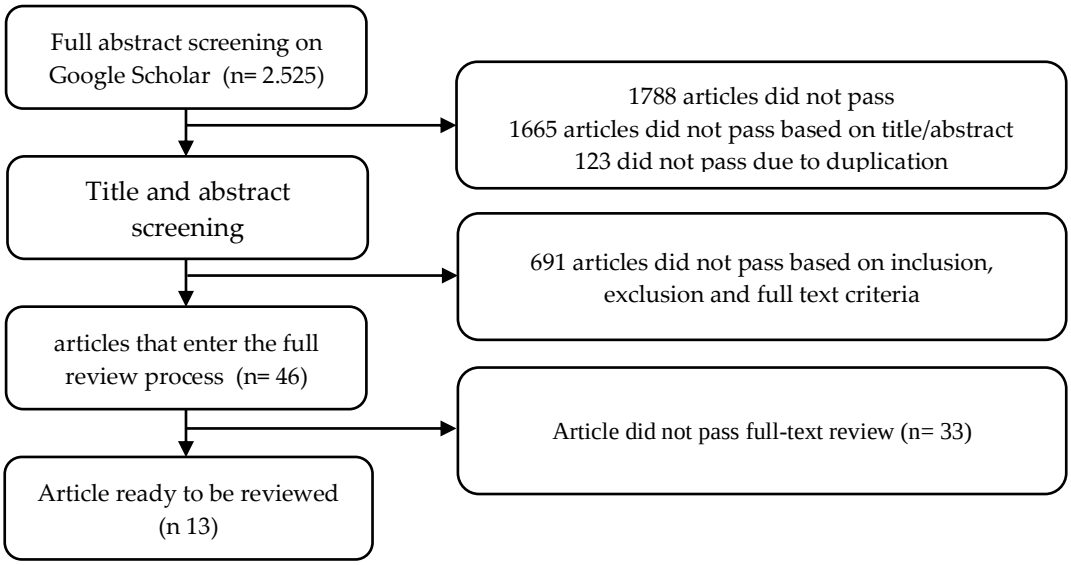

Figure 1. Manuscript selection process

3. Results and Discussion

Table 1 shows the tabular results of the review conducted for this study. Overall, the study explains and describes the contribution of EMR as a means that can help counseling patients to quit smoking. There seem to be more referrals for counseling on quitting smoking and documentation regarding smoking status following modifications made to the EMR with the goal of expediting the recording and management of tobacco use at medical appointments. This study adds to the body of research on EMR and smoking cessation by offering verifiable evidence that sophisticated EMR systems with features like clinical reminders change the structure of clinical encounters and increase the possibility that physicians will record smoking, offer counseling, and write prescriptions. When upgrading or purchasing an EMR system, doctors need to make sure it offers features that help patients stop smoking. Future proposals for the EMR Meaningful Use incentive and reward scheme by the federal government must include explicit measures that connect to programs aimed at helping people quit smoking.

Table 1. Studies Review

Study	Objective	Methods	Results
Szatkowski, 2011 [23]	To compare patients' memories of smoking cessation advice with records in the electronic medical record.	Survey	The records contained in the electronic medical record have a very good proportion of memory and help health workers to review their suggestions to patients.
Lindlom, 2010 [24]	Designing a smoking cessation treatment that focuses on the chief complaint through electronic medical records	Project demonstrated	Adult patients had a higher percentage of tobacco use after being identified as using EMR than previously (71.6% vs 78.4%, p<.001). In the year following implementation, 6.3% of adults who smoked received smoking cessation medication, 2.5% of

Study	Objective	Methods	Results
			adults who smoked reported that they received psychological help, and 1.5% of adults who smoked received psychological help.
Rindal, 2013 [25]	In order to provide a brief tobacco counseling and proceed to a smoking clinic, the EMR-approved guidelines should be used	Group-randomized trial	In a telephone survey answered by patients (72% response) it was found that providers felt interested in quitting (70% control compared to intervention 87%, p 0.0006); talking about specific strategies for quitting (26% control compared with intervention 47%, p 0.003) and directing patients to smoking cessation channels (control 17% compared with intervention 37%, p 0.007).
Bernstein, 2017 [26]	To address hospitalized smokers' self-medication of tobacco, explain the usage and consequences of new decision support tools and established sequences, and incorporate them into electronic health records	Cluster-randomized trial	The study noted that intervention physicians were more likely to order tobacco medication (35 vs. 29%, P < 0.0001), complete a tobacco use disorder checklist (41 vs. 2%, P < 0.0001), and then create referral to smoking cessation state (30 vs 0%, P < 0.0001). Designing and implementing a set of orders and alerts for tobacco medication in the EHR helps physicians place more orders for tobacco medication treatment, referrals to smoking cessation departments, and efficiently send emails to patient PCPs. It was concluded that the EHR was very helpful in the counseling actions carried out.
Bae, 2018 [27]	To evaluate the use of electronic medical auto-reminder (EMR) in primary care providers' efforts to cessation of smoking	Observation with Logit regression	For primary case visit documents, smoking status was recorded 77.7% of the time. 16.4% of the time in physicians' offices were ordered or provided smoking cessation counseling using electronic reminders approximately, compared to 9.1% of those without functionality. 3.7% of current smokers were ordered or prescribed smoking cessation medication when reminders were regularly used versus 2.1% of those who did not use

Study	Objective	Methods	Results
			reminders. All these differences have statistical significance.
Lisa, 2013 [28]	To understand some effective ways to increase the number of smoking-cessation requests in the prenatal EMR	A retrospective cohort study	a total of 95 patients were included (48 pre-enhancement, 47 post-enhancement). After enhancement, documentation of methods for smoking cessation increased (0 versus 1, p = 0.03) and documentation of smoking cessation attempts increased (1 versus 2, p = 0.006). The total number of cigarettes consumed did not change (p = 0.9). The counseling journey is well tracked.
Gina, 2013 [29]	To assess the documentation dampness, use the P4P incentive that serves as a payment agent and targets minorities in the healthcare system	Multivariate models	Documentation increased from 48% of 207,471 patients before P4P to 71% of 227,574 patients after P4P. Improvement occurred among patients eligible for P4P by 56% to 83% (AOR, 3.6; 95% CI, 2.9 to 4.5) and among patients not eligible for P4P by 56% to 80% (AOR, 3.0; 95% CI, 2.3 to 3.9), with a significant difference between the two groups (AOR, 1.3; 95% CI, 1.1 to 1.4, p=0.009).
Mathias, 2012 [30]	The purpose of this study is to evaluate electronic test results and test data related to research findings	Pre-intervention and post-intervention with cohort study	In this study there were 1,349 and 1,346 smokers in the groups before and after the intervention. Prescription of smoking cessation medications did not change significantly after the intervention (14.4% vs. 13.4% of smokers in the pre-intervention group, p = 0.5). This study showed that counseling referrals increased from 2.0% to 7.2% in the post-intervention group (p < 0.001) and were well tracked. The study also displayed that more smokers in the post-intervention group changed their smoking status to quit during the study period (20.5% vs. 17.1%, p = 0.06).
Karn, 2016 [31]	To provide physicians with a single-click link within the EMR system to	Qualitative	Health systems that can modify their EMR systems can help patients reduce cigarette use while meeting Meaningful Use requirements. Furthermore,

Study	Objective	Methods	Results
	streamline the electronic patient referral process to a state-funded quitline service		research should investigate whether referrals via eTobacco protocols have a direct correlation with patient smoking cessation rates.
Vidrine, 2013 [32]	To identification the 5As (ask, advice, assess, assist, and arrange) and Ask—Advise—Refer (AAR) are designed to support these practices	group-randomized trial that is pair-matched and has two treatment arms	According to this study, 14.7% of identified smokers who were registered for treatment benefited from AAC, which was significantly greater than the impact of AAR which was 0.5%, t(4) ¼ 14.61, p ¼ 0.0001 , OR¼32.10 (95% CI¼16 .60, 62.06).
Bae, 2015 [33]	To assess the level of sophistication and efficacy of electronic medical records (EMRs) in the context of ambulatory care settings with regard to recording smoking status, advise on quitting, and medication use	Regression analysis	Advanced EMR technology users are more likely to record their own smoking status, provide advice to patients on quitting, and track prescriptions for medications to aid in quitting.
Adsit, 2014 [34]	To develop and test a secure and closed EHR referral system that connects patients visiting health facilities to a government quit smoking telephone number	Survey	When compared with previous paper fax referrals, the percentage of adult tobacco users referred to the quitline via the eReferral system was much higher, at 14% versus 0.3%. This case study shows that a secure, closed-loop EHR-based eReferral system is effective and safe.
Greenwood, 2012 [35]	To assess the extent of the process improvement on the e-health record (EHR) that enables medical assistants (MA) to assist patients in receiving smoking-friendly	Survey with logistic regresion analysis	The results of a logistic regression analysis indicated that in 2010, the odds of first documentation (OR = 1.52; 95% CI = 1.42–1.62) and ongoing verification (OR = 2.86; 95% CI = 1.42–1.62) rose after controlling for variations between treatment sites. This is different from 2009. Recording smoking cessation as the main problem for current cigarette users increased

Study	Objective	Methods	Results
	care, more documentation and tools will be needed for smoking-friendly counseling		by 91% (OR = 1.91; 95% CI = 1.56–2.34). Documentation and referrals for smoking cessation can be increased in companies adopting electronic health records (EHR) by giving MAs the authority to encourage smoke cessation and by offering electronic referral options.

The facts above also help to partially illustrate how important an EMR is for supporting smoking cessation counseling in terms of data gathering , patient tracking and treatment effectiveness [13], [20], [25], [33], [35]. EMR support may not directly affect the rates of nicotine cessation, but it may help some well-researched, evidence-based clinical therapies for tobacco use.

In an investigation of the use of electronic health records (EHR) to enhance the recording and management of tobacco use among patients receiving medical and dental care. The use of electronic reminders to give therapeutic care for smoking patients appears to have increased, at least temporarily, the documenting of tobacco status and aid for smokers to quit [25].

In terms of prescribing drugs, EMR therapy also plays a very important role, because the data will be directly connected to the drug provider. Since there is a significant quality difference between patients who wish to stop smoking and those who are using the best cessation medications, differentiating services is desirable. EMRs could record this [30]. It can be difficult to find clear documentation when EMR is in charge of counseling patients. However, approaches such as these treatments for provider-directed quality improvement are patient-only procedures that often fall short of bridging the disparity between the recommended and actual care provided in the field. As a result, it is likely that prescription medication will be stopped. Future research should concentrate on overcoming patient-level obstacles to the use of medications for smoking cessation, as first efforts in this area have shown promise. However, attempts to improve the standard of smoking cessation treatment are likely to be unsuccessful unless patient-level barriers to using drugs for quitting smoking are routinely addressed.

Compared with counseling practices that did not optimize the use of EMR, health workers who used the basic system of documenting the smoking status of patients who maximized EMR were statistically significant in providing counselling. On adherence to standard of treatment, baseline EMR does not seem to have the anticipated effect, nevertheless. Advanced EMR practices, on the other hand, outperformed standard smoking cessation therapy in all three areas noticeably. This implies that the organization of encounters is influenced by EMR elements like clinical reminders, making physicians far more capable of handling them [20], [33].

The results of the literature review above illustrate that the electronic medical record can be used as a means to assist health workers in smoking cessation programs. Generally, more advanced EMR use is associated with increased defenses against merokok attacks by physicians in the field. The doctor who is purchasing or upgrading an EMR system needs to consider the quality of their surrounding environment as part of their patient care. The end of the insentif program and the federal government's Mean Use EMR mandate require measuring specific metrics relating to merokok activities.

The efficiency, quality, and satisfaction of health services are all improved by the implementation of an EMR system. The way in which users react to using the EMR system is one of the elements that determine whether or not an implementation is successful [36], one of which is used as a means of support for smoking cessation counseling. Although considerable achievements have been made in the dissemination of information technology in healthcare, the general clinical use of EMR systems has also been found to be unsuccessful. Although the exact causes of this loss of use are unknown, there are a few plausible theories. Computer proficiency, implementation procedures, immediate advantages, and effects on time efficiency are a few of them [37]. In light of growing financial limitations and stakeholder expectations for a good return on investment, it's critical to assess the effectiveness of EMR deployment [38] which will later be used to assist other counseling activities.

Previous research has shown low acceptance and failure rate for EMR implementation, but when EMR is always evaluated for its use, success will be obtained. The quality, utilization, and satisfaction dimensions are all included in the evaluation. If users are dissatisfied with the system, they might not wish to utilize it, regardless of the findings of the assessment of the system's satisfaction level. The failure of EMR implementation has been attributed, in part, to user resistance [39]. So it can be concluded that the effectiveness of using EMR as a supporting tool for smoking cessation counseling must continue to be evaluated.

4. Conclusions

This study illustrates the contribution of EMR as a tool that can assist health workers in providing interventions in patients with smoking heart. EMR has become a recommendation for several health workers to simplify the counseling process about tobacco use. Records of the state of tobacco and the procedures for smoking cessation counseling increased following ESDM modifications intended to maximize the benefits of recording and handling for tobacco users when they use health services. Additional research into uncovering additional treatment and tobacco cessation outcomes in healthcare settings could enhance the potential of EMR.

Critical to addressing workflow issues unique to the healthcare sector, and to ensuring that protocols are implemented in an easy-to-use format, is to address background research regarding healthcare. system and collaborate with the vendor of the EMR software. Suggestions for incorporating the learning curve into the health system include getting support from the administrative staff, companies that provide health services, and EMR vendors to make the integration more efficient. System quality, including adherence to work templates, is crucial for successful implementation. To quickly make changes to any ESDM system, collaboration and system acceptance with the target kesiapan threshold are also very important. The health system may still be in the early stages of implementation.

For further research, research can be carried out regarding the effectiveness of implementing EMR in improving smoking cessation outcomes. Further analysis related to success rates, patient compliance, and long-term impact on health, can also analyze the factors that influence the adoption and integration of EMR in daily clinical practice.

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