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Electronic Health Record System

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ABSTRACT:

Electronic Health Record Systems (EHRS) have revolutionized healthcare delivery by digitizing patient information, streamlining processes, and enhancing clinical decision-making. This abstract provides an overview of EHRS, focusing on their features, benefits, challenges, and future prospects. EHRS encompasses comprehensive electronic repositories of patient health information, including medical history, diagnoses, medications, allergies, lab results, and treatment plans. They facilitate secure sharing of data among healthcare providers, ensuring continuity of care and reducing medical errors. Moreover, EHRS promotes efficiency through automated workflows, improved communication, and easy access to patient records.

Key-Words: *EHRS*

I. Introduction

Electronic Health Record Systems (EHRS) have emerged as a cornerstone of modern healthcare, revolutionizing the way patient information is managed and utilized within clinical settings. In recent years, the healthcare industry has witnessed a significant shift from paper-based record-keeping systems to digital platforms that offer unparalleled efficiency, accessibility, and data-driven insights. EHRS encompass comprehensive electronic repositories that store and organize patient health information, ranging from medical history and diagnosis to treatment plans and laboratory results.The evolution of EHRS can be traced back to the early stages of information technology adoption in healthcare, with initial systems focusing primarily on digitizing patient records and automating administrative tasks. However, as technology has advanced, so too have EHRS, incorporating features such as interoperability, decision support tools, and patient engagement functionalities. Today, EHRS are an integral component of the healthcare ecosystem, utilized across various healthcare settings, including hospitals, clinics, and physician practices.

II. Objectives

2.1 What is users' opinion and what you think well describes what EHRS means?

2.2 Which EHR Systems was used by your hospital for maintaining patient records?

2.3 Which EHR Systems have been used by hospitals to maintain the patient record?

2.4 Which EHR Systems was preferred most by Hospitals?

2.5 Opinion on cost factor between EHRS and traditional way of storing patient data.

III. Historical Background

Learning is not a new concept but has been reinvigorated by technology. Historically, it draws inspiration from constructivist and experiential learning theories, which emphasize active participation and problem-solving as effective learning strategies. The advent of the internet and digital tools has provided a fertile ground for the emergence of e-learning platforms, which promote hands-on, experiential learning. It aims to create an interactive environment rich in applications based on computer and Internet technologies, enabling access to learning resources at any time and from anywhere. That is, e-learning refers to all forms of learning and education in which information and communication technologies are exploited to enable face-to-face and online interactions.

IV. Literature Review

A study of the existing system is a critical phase in the development of any project, including an Electronic Health Record System. This analysis helps in understanding the current landscape, identifying shortcomings, and setting a solid foundation for designing and implementing improvements. Here's how a study of the existing system for an Electronic Health Record System might be conducted:

A comprehensive survey of existing Electronic Health Record System reveals a diverse landscape:

a. Epic EHR: Epic software is a leading electronic health record system used in healthcare. It provides a comprehensive solution for managing patient records, appointments, and medical processes.

Advantages:

- Interoperability- A medical practice can exchange data and charts with other healthcare providers and organizations.
- Offers hundreds of third party applications to fit the needs of any sized medical practice.
- There is an option for cloud hosting.

Disadvantages:

- Reputation for having a large implementation fee.
- May not be very receptive to user-requested changes.

Reference Link-https://www.epic.com/

b. MEDITECH: MEDITECH is a company that develops EHR software to improve the quality of clinicians' interactions with patients. Its goal is to improve physician satisfaction and enable healthcare providers to offer efficient services through instant access to patient records and insights.

Advantages:

- Lots of flexibility and customization.
- Simplicity is MEDITECH's middle name.
- Dependable. MEDITECH has been at 85% of its sites for over 10 years.

Disadvantages:

- The user interface may appear old school.
- Updates have been reported to cause issues.

Reference Link- https://ehr.meditech.com/

c. MEDHOST: MEDIHOST's broad offering of hosting, outsourcing, marketing, and consulting services are changing how clinicians and hospital leaders work and collaborate while generating notable operational, clinical, and financial improvements in healthcare information technology.

Advantages-

- Ease of Use- simplicity and user-friendly interface.
- Customer Support- responsiveness and helpfulness in user reviews
- Customizability- ability to be customized according to individual needs.

Disadvantages –

- Double Work Required- users have had to enter the same information 2-3 times.
- Loading time high due to stats and time draws.

Reference Link- https://www.medhost.com/

d. Kareo: Kareo is the only cloud-based clinical- and business-management platform purpose-built for independent practices. It's all-in-one integrated modules work together seamlessly to empower hospitals with the tools to tackle the toughest administrative challenges

Advantages:

- The ability to easily integrate its billing.
- Practice Management solutions are popular.

- Customizable templates.

Disadvantages:

- Customer service is questionable.
- Hard to leverage the benefits of the overall system.

Reference Link: https://www.kareo.com/

e. Advance MD: Advance MD is a comprehensive Electronic Health Records (EHR) software designed to streamline medical practice workflows and enhance patient care. It offers advanced features and functionalities tailored to meet the specific needs of healthcare providers, including physicians, nurses, and administrative staff.

Advantages:

- Advance MD helps practices with the implementation of their EHR system, including software installation, configuration, and customization.
- Advance MD provides training for healthcare providers and staff on how to use the EHR system effectively. ,

Disadvantages:

- While Advance MD offers billing software and services to help practices manage their revenue cycle, they do not provide full-service medical billing and coding services
- Advance MD does not provide credentialing services to help practices enroll with insurance companies and government payers

Reference Link: https://www.advancedmd.com/

f. Praxis EMR: Praxis is a customizable cloud- or server-based EHR system and is certified as a complete EHR for MACRA and freely automates CMS Quality Reporting Programs

Advantages:

- Template-free model allows for utmost freedom and customization.
- Improves medical quality.

Disadvantages:

- Praxis does not offer healthcare consulting services to help practices improve their operational efficiency.
- Praxis does not provide credentialing services to help practices enroll with insurance companies and government payers.

Reference Link: https://www.praxisemr.com/

g. Cerner: Cerner's EHR platform, the Millennium, constitutes of a fully-integrated cloud-based EHR system that spans the care continuum aimed at improving workflow, organization, and advancing patient care.

Advantages:

- Easy navigation and organization.
- Protects against HIPAA errors.
- Automatic transfer of charting data using a variety of input methods.

Disadvantages:

- Due to its complexity, Cerner can have a steep learning curve for new users.
- While Cerner offers customer support, some users have reported issues with response times and the quality of support provided.

Reference Link: https://www.cerner.com/

h. eClinicalWorks: eClinicalWorks is an integrated cloud-based EHR system and Revenue Cycle Management solution that provides resources for efficient documentation, industry-leading value and satisfaction, and in-depth user satisfaction.

Advantages:

- Virtual visits via telemedicine application.
- Free conversion packages.

- Training included for small practices.

Disadvantages:

- Some users have reported issues with eClinicalWorks' customer support, including long wait times and difficulty resolving technical issues.
- While eClinicalWorks offers a wide range of features, some users find the user interface to be less intuitive compared to other EHR systems.

Reference Link: https://www.eclinicalworks.com/

i. Nextgen: NextGen offers a fully integrated cloud-based EHR system, which specialty-specific content, a claims clearing house, an easy-to-use patient portal that collectively increase productivity, improve financial outcomes, enrich patient satisfaction and experience, and ease health data communication

Advantages:

- Generates patient treatment and solution plans.
- Designed to improve patient engagement and reduce administrative burden.
- Well-regarded training and support system.

Disadvantages:

- NextGen's EHR system is known for its robust features and capabilities, but this can also make it complex to use.
- Some users find NextGen's user interface to be less intuitive compared to other EHR systems.

Reference Link: https://www.nextgen.com/

V. Research Methodology

Research methodology in building Electronic Health Records (EHRs) typically involves several key steps to ensure the system meets the needs of healthcare providers and patients while adhering to regulatory requirements. Here is a general outline of the research methodology:

Needs Assessment: The first step we have done is conduct a thorough needs assessment to understand the requirements of the healthcare organization and the end-users (e.g., physicians, nurses, administrative staff). This involves interviews, surveys, and observation to gather information about current workflows, pain points, and desired features of the EHR system.

Literature Review: A comprehensive literature review is conducted to review existing research, best practices, and standards related to EHR development and implementation. This helps to inform the design and development process and ensures that the EHR system aligns with industry standards and guidelines.

Design and Development: Based on the needs assessment and literature review, we have designed and developed the EHR system. This involves creating wireframes, prototypes, and mock-ups to visualize the system and gather feedback from stakeholders. Iterative design and development cycles are typically used to refine the system based on user feedback.

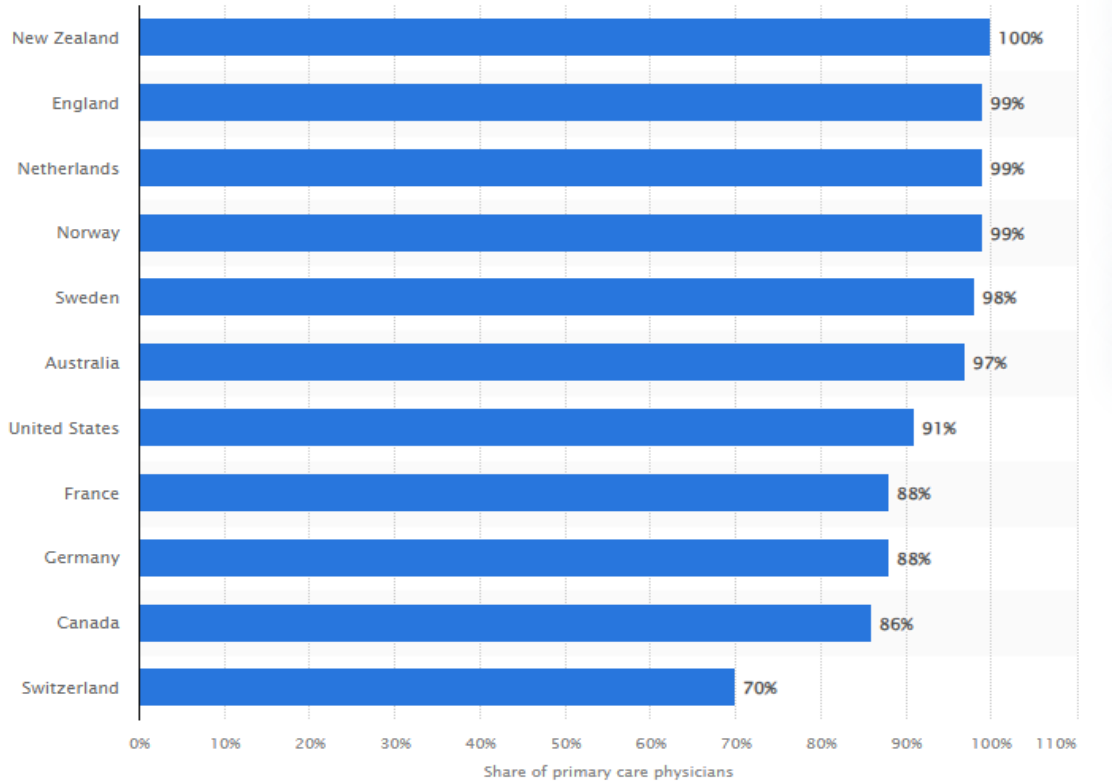
Usability Testing: Usability testing is conducted to evaluate the ease of use and effectiveness of the EHR system. This involves observing users as they interact with the system and collecting feedback through surveys or interviews. The goal is to identify any usability issues and make improvements to enhance user satisfaction and efficiency.

Pilot Testing: A pilot test is conducted to evaluate the EHR system in a real-world setting before full implementation. This allows for further refinement of the system based on feedback from users and identifies any potential issues that need to be addressed before full deployment.

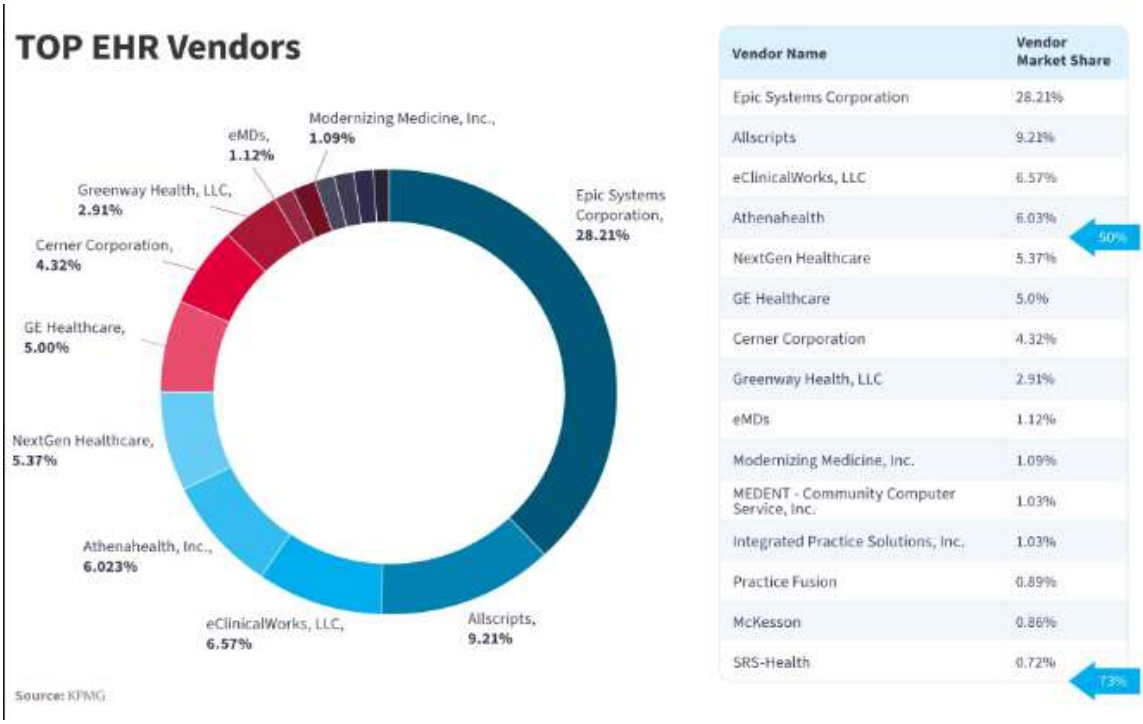
Implementation and Evaluation: The EHR system is implemented across the healthcare organization, and its impact is evaluated. This may involve assessing the system's effectiveness in improving patient care, reducing costs, and enhancing efficiency. Feedback from users and stakeholders is collected to identify areas for improvement.

Continuous Improvement: WE have a plan for continuous improvement of the EHR system based on feedback from users, changes in regulatory requirements, and advancements in technology. This ensures that the EHR system remains effective and up-to-date over time.

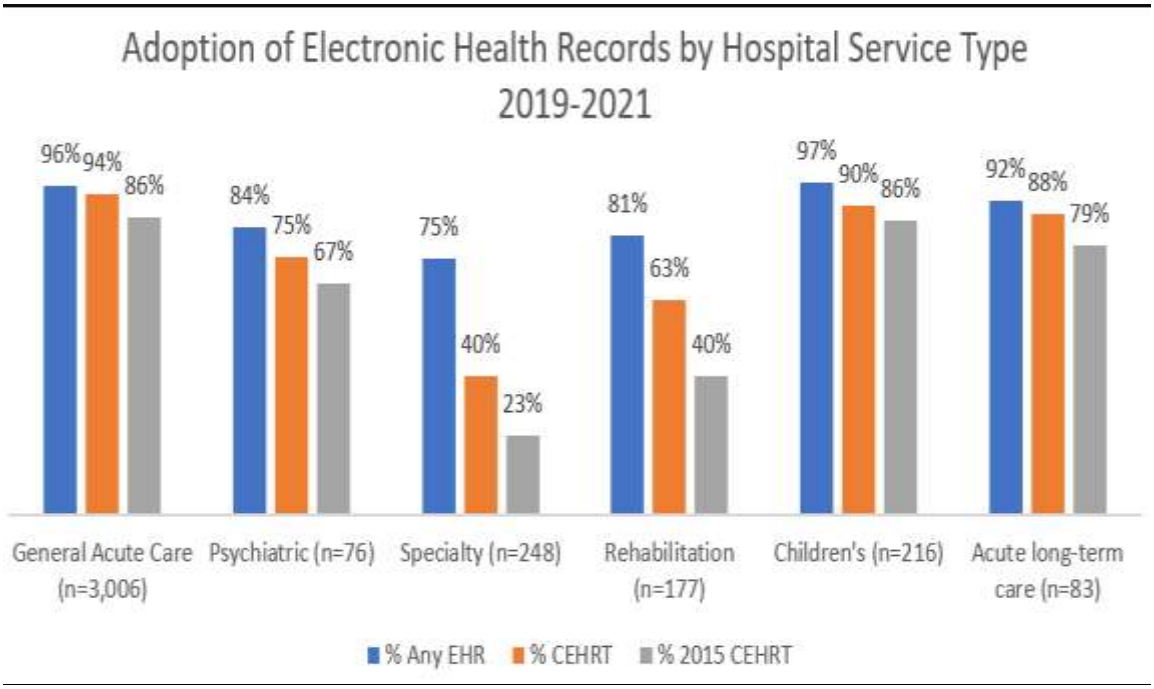
Countries with most EHRS users:



Some leading EHR Systems



USers enrolled to EHR Systems



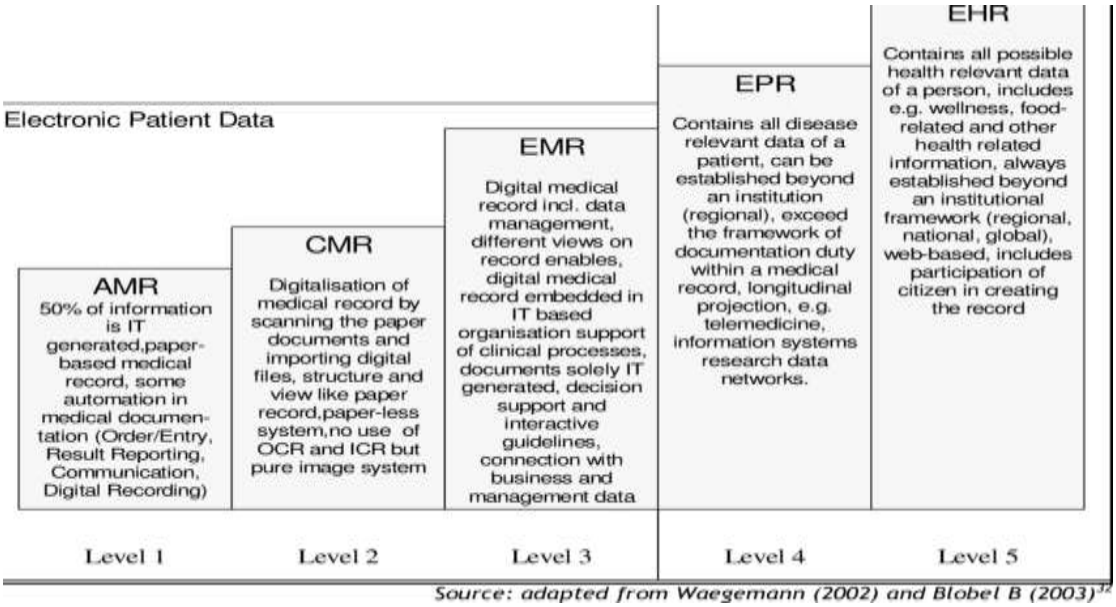
VI. Result Discussions

Research on Electronic Health Record Systems has yielded a spectrum of results that illuminate the impact and potential of saving the patient data online. Such research consistently showcases the notable benefits of EHRS, including improved accessibility, cost-effectiveness, and the provision of storing data. EHRs have the potential to significantly improve healthcare delivery by streamlining workflows, reducing errors, and enhancing communication between providers and patients. Moving forward, it will be important to address challenges related to usability, training, and interoperability to maximize the benefits of EHRs.

Findings from Survey:

- The survey found that a majority of healthcare providers (78%) are satisfied with their current EHR system. However, some users expressed concerns about usability and the need for additional training.
- Majority users responded that PRACTO is the most used platform by their Hospitals.
- The survey identified several challenges associated with EHR use. These include concerns about data security and privacy (reported by 65% of respondents), interoperability issues with other healthcare systems (52%), and the time-consuming nature of EHR documentation (46%).
- EPIC has the largest market share.
- Looking ahead, respondents expressed interest in future EHR developments, such as enhanced data analytics capabilities, improved interoperability with other systems, and greater customization options to meet the specific needs of their practice.

Meaning of Different platforms:



Source: adapted from Waegemann (2002) and Blobel B (2003)[12]

VII. Conclusion

Electronic Health Record Systems (EHRS) have become an indispensable tool in modern healthcare, revolutionizing the way patient information is managed and utilized. The evolution of EHRS from basic record-keeping systems to sophisticated platforms has led to significant improvements in patient care, clinical workflows, and overall healthcare delivery.

Through a thorough research methodology, including needs assessments, literature reviews, design and development, usability testing, pilot testing, and continuous improvement, healthcare organizations can successfully implement EHR systems that meet their specific needs and enhance the quality of care provided to patients.

While challenges such as data security, interoperability, and cost remain, the benefits of EHRS, including improved access to information, enhanced patient outcomes, and increased efficiency, outweigh these challenges. Moving forward, it is essential for healthcare organizations to continue to invest in EHRS and leverage advancements in technology to further improve healthcare delivery and patient outcomes.

VIII. Acknowledgment

We would like to express our deep appreciation to all those who contributed to the research and production of this paper on Electronic Health Record Systems. The collective efforts of our research team, the invaluable insights of educators and students, and the support of our partners and collaborators have been instrumental in shaping this research. We also extend our gratitude to our respondents that made this work possible. Your contributions have been essential in advancing our understanding of EHRS and their impact on patients data storage.

IX. References

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