Universiti Teknologi MARA

Smart Electronic Health Record System With Integrated Telehealth For Klinik Pakar Lawatan (KPL)

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ABSTRACT

Electronic Health Record (EHR) systems have revolutionized the way healthcare organizations manage and access patient information. EHR systems provide a centralized, efficient, and secure platform for healthcare providers to deliver better patient care by digitizing medical records. These systems reduce reliance on paper-based processes, minimize errors and enable real-time access to critical data. In the context of Klinik Pakar Lawatan the challenges of manual record management are particularly acute in rural settings where healthcare providers often struggle with inefficient workflows. This project focuses on developing a web-based EHR system to digitize and centralize the records, enabling real time data access for healthcare providers, including doctors, nurses and specialists. Additionally, the integration of Telehealth functionality serves as a major enhancement that allows healthcare providers to conduct virtual consultations and update medical records remotely. This feature is particularly beneficial for patients in remote areas who face difficulties in attending face-to-face visits, ensuring continuity of care and increasing accessibility to specialist services. Utilizing the agile methodology, the system ensures iteratives development to meet user requirements, improves operational efficiency and quality. Furthermore, by implementing Agile methodology, the system ensures flexibility and iterative development. Key features include role-based access, real-time data updates, and patient access to medical records for greater involvement in their healthcare. Through the initiative, the project proposes to develop a centralized digital repository system for clinic's manual data management system that enable healthcare providers to access and update medical information in real time. By integrating innovative digital solutions, this initiative seeks to improve healthcare delivery quality while ensuring data security and reliability. The findings from the evaluation phase indicate positive outcomes across all testing methods. The System Usability Scale (SUS) yielded an average score of 69.0, demonstrating that the system is user-friendly and meets standard usability benchmarks. User Acceptance Testing (UAT) revealed that users including patients, nurses, doctors, and specialists were highly satisfied with the system’s functionality, usefulness, and interface design. Functionality testing further confirmed that all major modules, including patient registration, appointment scheduling, telehealth consultation, and record management, operated correctly and reliably. As for future work, the system can be improved by supporting more types of medical specialists, providing a mobile version for easier access, and allowing patient self-registration. Future enhancements may also include PDF download of medical records and automatic vital sign input during telehealth using connected devices. These upgrades aim to make the system more practical and scalable for wider use in rural clinics.

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CHAPTER 1

INTRODUCTION

This chapter includes background information as well as a rationale for conducting the research. It also discusses the importance of the project on the internet and the concerns and problems that led to this research. This chapter covers the background, problem statement, research question, research objectives, project scope, project significance and expected outcome.

1.1 Background

In the healthcare industry, such as clinics and hospitals are adapting to challenging demands and embracing technological advancements, an approach that will be pivotal in facilitating sustainable healthcare systems across the globe. According to Woffindin (2023), the healthcare industry is now technology driven which is increasing productivity and efficiency in the healthcare industry, just as it is in many other aspects of life. Technology in the healthcare sector refers to the use of digital tools, devices, software and systems to improve the delivery, management and accessibility of healthcare services. This includes a wide range of technologies such as websites, mobile applications, electronic health record (EHR) and more. Furthermore, routine administrative tasks can be automated, workflows can be streamlined, and paperwork can be reduced. In other words, digital systems are more efficient and less prone to errors (Woffindin, 2023).

Klinik Pakar Lawatan (KPL) at Klinik Kesihatan Hulu Terengganu, located in a rural area of Terengganu, serves as a local facility for scheduled specialist visits. These visits are conducted by medical professionals from larger hospitals such as Hospital Sultanah Nur Zahirah (HSNZ), typically on a monthly basis. However,