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The impact of Electronic Medical Record (EMR) system on performance of PCEA Chogoria Hospital in Tharaka Nithi County, Kenya

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Abstract

This study investigated the impact of the Electronic Medical Record (EMR) system on the performance of PCEA Chogoria Hospital in Tharaka Nithi County, Kenya. The adoption of Electronic Medical Records systems in healthcare facilities has become increasingly prevalent globally, promising enhanced efficiency, cost-effectiveness, and improved access to patient information. Data collection involved the administration of questionnaires and interviews with 100 technical staff members, including clinical professionals, nurses, and medical records information officers working at PCEA Chogoria Hospital. The analysis revealed significant improvements in access rights, reporting and analysis functionalities, and clinical management support, indicating the overall positive impact of the EMR system. However, opportunities for further enhancement in customisation and utilisation were identified. Additionally, strategic budget allocation and resource provision were crucial for effective EMR initiatives, emphasising the importance of targeted training programs and transparent communication. Administrative support was highlighted as essential for successful EMR implementation and utilisation, underscoring the need for continuous evaluation, training, and reinforcement of roles and responsibilities. In conclusion, the findings underscore the significant impact of Electronic Medical Records (EMR) systems on the performance of PCEA Chogoria Hospital. Recommendations include investing in targeted training programs, transparent communication channels, and resource allocation strategies to optimise the impact of EMR systems on healthcare delivery and patient-care outcomes.

Key words: Electronic Mail Record system, healthcare, information, patient-care, performance.



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INTRODUCTION

The global healthcare landscape has seen a rapid integration of computerized technology, particularly in managing medical records, to enhance both the quality of care and operational efficiency (WHO, 2019). Electronic Medical Records (EMRs) have emerged as pivotal tools in facilitating informed decision-making among healthcare practitioners while streamlining regulatory processes (Gagnon et al., 2014). Embracing EMR systems has been underscored by the World Health Organization (WHO) to achieve paperless transactions within healthcare, promoting standardized care delivery, cost-effectiveness, patient awareness, and timely access to accurate information (Agency for Healthcare Research and Quality, 2015).

The adoption of EMR technology has been gaining momentum within the African continent, mirroring global trends. In Kenya, for instance, initiatives such as fun-soft LIMS and KenyaEMR have been introduced to digitize medical records and streamline healthcare operations (Nzomo, 2017). Despite these efforts, challenges such as incomplete records, documentation errors, and inadequate technical skills persist, leading to suboptimal performance in some healthcare facilities. Nonetheless, hospitals that have fully transitioned to paperless systems have reported improved efficiency, cost reduction, enhanced patient safety, and increased productivity (Nzomo, 2017).

On a regional level, the impact of EMR systems on healthcare performance has been studied extensively. In Japan, where EMR adoption has been widespread for over two decades, hospitals have experienced enhanced quality of care, improved efficiency, and heightened patient safety (Kaneko et al., 2018). Similarly, implementing EMR systems in India has addressed challenges such as delayed patient care and data inaccuracies, leading to more timely access to comprehensive health information and improved healthcare outcomes (Giaedi, 2018).

Tharaka Nithi County in Kenya presents a microcosm of the challenges and opportunities associated with EMR implementation in a localised context. Despite the proliferation of hybrid EMR systems in the region for the past two decades, data redundancy and unreliability concerns persist (Mugambi, 2016). The transition to fully integrated EMR systems promises improved care

standards, enhanced accountability, transparency in healthcare programs, and increased service delivery efficiency (Gagnon et al., 2014). However, addressing the existing challenges and maximising the benefits of EMR adoption requires concerted efforts in capacity building, resource allocation, and administrative support within healthcare institutions in Tharaka Nithi County.

Access to accurate and timely patient information is essential for effective healthcare governance, particularly within universal sector healthcare departments. Electronic Medical Records (EMR) systems have emerged as promising tools for enhancing data availability and governance in the healthcare sector (Boonstra et al., 2014). However, despite their implementation in Tharaka Nithi County for over two decades, challenges persist, including delays, invalid data classification, accessibility issues, and inaccuracies within the existing physical medical records management system (Mugambi, 2016). While EMR systems aim to streamline data entry processes, reduce errors, and enhance efficiency, they have also introduced complexities such as information redundancy and inadequacy, exacerbating existing challenges in healthcare information management (Ratwani et al., 2018). Additionally, resistance to EMR adoption persists among medical practitioners and healthcare professionals, posing barriers to effectively implementing and utilising these systems. Therefore, this study sought to investigate the impact of EMR systems on the performance of PCEA Chogoria Hospital, with a specific focus on identifying existing challenges and opportunities for improvement in healthcare delivery and information management practices. By exploring the effectiveness and limitations of EMR systems within the hospital setting, this study aims to provide valuable insights that can inform recommendations for enhancing the utilisation of EMR systems, addressing resistance among medical practitioners, and optimising healthcare governance and data management processes. Through this examination, the study aimed to contribute to the ongoing discourse on healthcare information technology and its role in improving patient care outcomes and healthcare delivery efficiency.

LITERATURE REVIEW

Electronic Medical Records (EMR) systems have gained global attention for their potential to enhance healthcare

delivery and information management practices. Studies from various parts of the world, including India, Japan and the Islamic Republic of Iran, highlight the benefits of EMR adoption in improving data accuracy, patient safety, and overall healthcare efficiency (Kaneko, 2018; Giaedi, 2018). These systems have been shown to streamline data collection, reduce medication errors, and facilitate rapid access to patient information, thus contributing to evidence-based decision-making and improved patient care outcomes (Chawani, 2014).

In the African context, the adoption of EMR systems presents unique challenges and opportunities. Studies from Kenya emphasize the importance of EMR utilization in addressing inefficiencies in healthcare delivery, such as poor data quality, manual record-keeping errors, and inadequate resource allocation (Nzomo, 2017). The Kenya National eHealth Strategy 2016–2030 underscores the need for technological advancements, leadership support, and capacity building initiatives to overcome barriers to healthcare access and improve overall health outcomes (Benedictis, 2020).

Within East Africa, healthcare facilities increasingly recognize the value of EMR systems in enhancing patient care and organizational efficiency. Studies from the region highlight the role of EMRs in improving data standardization, medication management, and healthcare workforce productivity (Mwang'ombe, 2012; Siika et al., 2015). However, challenges such as inadequate ICT infrastructure, limited technical expertise, and resistance to change remain significant barriers to widespread EMR adoption and utilization (Siika et al., 2015).

At the national level, Kenya Vision 2030 emphasizes the importance of leveraging technology, including EMR systems, to achieve universal healthcare coverage and improve health access for all citizens. The successful implementation of EMRs is seen as crucial for enhancing healthcare quality, reducing costs, and promoting optimal medical performance (Kenya Healthcare Federation, 2015). However, the reluctance of healthcare professionals to fully capitalize on EMR systems poses challenges to realizing these benefits, highlighting the need for targeted capacity building and change management initiatives (Benedictis, 2020).

In the specific study area of Tharaka Nithi County, the adoption and performance of EMR systems at PCEA

Chogoria Hospital are of particular interest. Previous research has identified factors such as staff ICT knowledge, system interoperability, and internet connectivity as key determinants of EMR performance in this setting (Nyaga, 2014). Additionally, concerns about data quality, patient privacy, and medication errors underscore the importance of evaluating the impact of EMR systems on healthcare delivery and patient outcomes within this context (Boonstra et al., 2014). Through a comprehensive literature review, the study seeks to build upon existing knowledge and contribute valuable insights into the performance and challenges of EMR systems at PCEA Chogoria Hospital in Tharaka Nithi County.

RESULTS AND DISCUSSION

Impact of Electronic Medical Record System on the Performance of PCEA Chogoria Hospital

The analysis of the impact of access rights and privileges on the performance of PCEA Chogoria Hospital in Tharaka Nithi County utilised Likert scale questions to gather insights from healthcare workers regarding various aspects of EMRS access and privileges. These dimensions encompassed the adequacy of access rights aligned with users' roles, the level of security measures ensuring patient information confidentiality, the empowerment derived from the EMRS for effective duty execution, the customisation of access permissions, and the ease of requesting and obtaining access privileges. The findings are illustrated in Figure 1.

The majority of respondents (65%) agreed or strongly agreed regarding the adequacy of access rights, reflecting a positive perception of the system's accessibility and appropriateness, crucial for its efficient utilisation (Nyaga, 2014). Regarding security measures, the analysis revealed that a significant proportion (70%) of respondents expressed satisfaction with the level of security measures implemented to safeguard patient information within the EMRS. This high satisfaction level underscores the hospital's commitment to prioritising patient privacy and confidentiality, aligning with literature emphasising the pivotal role of data security in EMRS (Benedictis, 2020). Moreover, a substantial percentage of respondents (65%) felt empowered by the EMRS, indicating its positive impact on staff confidence and autonomy in executing clinical and administrative tasks, albeit with some room for

improvement to address the concerns of less empowered staff (Smith et al., 2013).

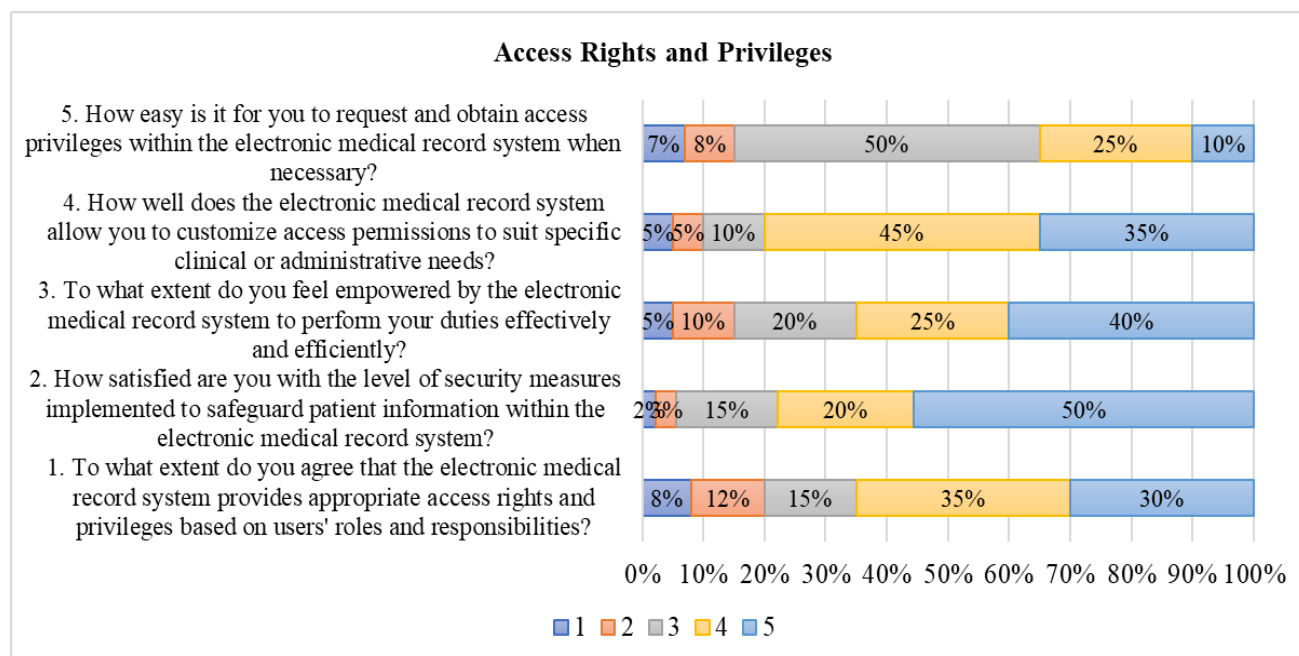


Figure 1: Access Rights and Privileges

The analysis also highlighted the perceived effectiveness of customisation of access permissions within the EMRS, with the majority of respondents (80%) perceiving it positively. This suggests that the EMRS design accommodates the diverse needs of healthcare professionals, potentially enhancing efficiency and usability. However, efforts should be directed towards addressing concerns raised by respondents who perceive the customisation capability as inadequate. Furthermore, regarding the ease of requesting and obtaining access privileges, the analysis revealed a neutral stance among respondents (50%), indicating potential scope for streamlining access request procedures to enhance user experience and efficiency. These findings underscore the importance of continuous evaluation and improvement to optimise EMRS performance and effectively support healthcare delivery at PCEA Chogoria Hospital.

Discussion

The analysis of the impact of the Electronic Medical Record System (EMRS) on the performance of PCEA Chogoria Hospital revealed significant insights into various aspects of EMRS implementation. Through Likert scale questions, healthcare workers provided

valuable perceptions regarding access rights and privileges, highlighting the adequacy of access permissions based on user's roles, the effectiveness of security measures ensuring patient information confidentiality, and the empowerment derived from the EMRS for effective duty execution. Moreover, the analysis shed light on the customisation of access permissions and the ease of requesting access privileges, indicating areas for improvement to optimise EMRS utilisation. These findings underscore the importance of continuous evaluation and enhancement of EMRS performance to support efficient healthcare delivery.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions: In conclusion, examining the impact of the Electronic Medical Record System (EMRS) on the performance of PCEA Chogoria Hospital revealed positive perceptions regarding various aspects of EMRS access and privileges among healthcare workers. Most respondents expressed satisfaction with the adequacy of access rights, the effectiveness of security measures ensuring patient information confidentiality, and the empowerment derived from the EMRS for effective duty execution. Moreover, the perceived effectiveness of

customisation of access permissions and the neutral stance on the ease of requesting and obtaining access privileges underscored opportunities for improvement to optimise EMRS performance and support healthcare delivery effectively at PCEA Chogoria Hospital. Continuous evaluation and enhancement of EMRS functionalities are crucial to address the identified areas for improvement and ensure the efficient utilisation of the system to enhance patient care outcomes.

Recommendations: For the impact of the Electronic Medical Record System (EMRS) on the performance of PCEA Chogoria Hospital, periodic assessments of access rights and privileges are recommended to ensure alignment with users' roles and responsibilities. This includes continuously evaluating security measures to

safeguard patient information confidentiality and initiatives to empower staff by effectively utilising the EMRS. Additionally, efforts should address concerns related to customising access permissions and streamlining access request procedures to enhance user experience and efficiency. Continuous evaluation and improvement are crucial to optimise EMRS performance and effectively support healthcare delivery at PCEA Chogoria Hospital, ensuring the system remains accessible, secure, and empowering for all users. However, efforts should be directed towards addressing concerns raised by respondents who perceive the customisation capability as inadequate.

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