Transformation from Manual Medical Records to Electronic Medical Records: A Phenomenological Study

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Abstract

With the rapid advancement of information technology in the healthcare sector, the implementation of electronic medical records has become a dominating trend. The transition from manual medical records to electronic medical records is not just a technological transformation but also a revolution in healthcare services. This research aims to explore the hospital's experience in transitioning from manual medical records to electronic medical records at dr. R. Soeharsono hospital, a level iii hospital. This research utilizes a qualitative approach with a phenomenological design. Data collection is conducted through in-depth interviews, and data analysis follows the colaizzi method. Triangulation methods were carried out by means of interviews with electronic medical records users, document analysis, and field observations The study involves four participants. The results reveal four main themes: Benchmarking, Finding suitable service platforms, EMR facilities, EMR training and Implementation of EMR. Electronic medical records training emerges as a crucial factor in preparing for electronic medical records usage, supported by regulations mandating electronic medical records service platforms. The use of external service platforms is acknowledged as an effort to enhance data security. The success of the implementation of electronic medical records also relies on the availability of supporting facilities and the selection of the right service platforms. This research provides important insights for hospitals and related parties to understand the transformation process from manual medical records to electronic medical records optimally.

Keywords: Electronic Medical Record, technology

INTRODUCTION

With the rapid advancement of information technology across various sectors, including healthcare, the implementation of electronic medical records (EMR) has emerged as a dominant trend. The adoption of EMR systems aims to assist healthcare providers in decision-making (Kruse et al., 2017) and streamline healthcare workflows through efficient coordination in patient care (Wani & Malhotra, 2018).

In the era of technological progress in healthcare, the shift from manual medical record systems (MMS) to EMR represents more than just a technological transformation; it signifies a revolution in healthcare service delivery. This transition has significant impacts on the quality of healthcare services, improving treatment efficiency, regulatory compliance, and reducing medication errors (Campanella et al., 2015). Additionally, MMS often suffer from incomplete data entry processes (Asih & Indrayadi, 2023a).

Research conducted by (Aguirre, Suarez, Fuentes, & Sanchez-Gonzalez, 2019) emphasizes that EMR is not merely a technological advancement but an innovation that can

bring substantial changes to workflow productivity and provide a safer approach to patient care. In building the foundation for healthcare transformation through EMR, it is essential to recognize that several obstacles pose significant challenges. These obstacles include costs, technical issues, technical support, and resistance to change, which are key factors often encountered in EMR development (Kruse, Kristof, Jones, Mitchell, & Martinez, 2016).

Previous studies state that the success of EMR implementation depends on factors such as success indicators, implementation barriers, confidentiality or security, and the benefits of EMR usage (Amin, Setyonugroho, & Hidayah, 2021). Another literature review highlights that electronic medical records in Indonesia are still in the stage of system development, user readiness, implementation, auditing, and system improvement (Asih & Indrayadi, 2023b).

The use of EMR presents several challenges, such as privacy and data security concerns (Papoutsi et al., 2015); (Alassaf & Gutub, 2019), poor data quality (Feder, 2018) and complex legal ethics (Keshta & Odeh, 2021). Despite facing numerous challenges, EMR can serve as big data to predict future health phenomena (Meystre et al., 2017), Examples of utilizing EMR in health prediction include assessing the risk of death through alerts (Honeyford et al., 2020), predicting hypoglycemia (Ruan, Tan, Lumb, & Rea, 2019) and preventing nosocomial infections (Pi, Expert, Clarke, Jauneikaite, & Costelloe, 2021).

Facing the monumental change from MMS to EMR, medical record officers in hospitals encounter various challenges. Therefore, it is crucial to understand the experiences of these professionals to unlock innovative solutions capable of overcoming obstacles and realizing the full potential of EMR implementation in enhancing the efficiency and quality of healthcare services. This study aims to explore the experiences of medical record officers involved in the transition from MMS to EMR.

METHODS

This research uses qualitative research with a phenomenological design. The study was conducted at the Hospital TK.III. dr. R. Soeharsono Banjarmasin. Participant selection is purposive, targeting individuals engaged in the transformation process from MMR to EMR who willingly participate in the study. There are four participants identified as P1, P2, P3, and P4. Data collection is carried out through interview sessions lasting 20-60 minutes. Data collection takes place from December 2023 to January 2024. Prior to in-depth interviews, participants who express their willingness to participate sign an informed consent form. Data analysis in this study utilizes Colaizzi's method analysis technique (Morrow, Rodriguez, King,

& Nigel, 2015). The research concludes upon data saturation, where no new information is found from the participants.

The triangulation of research data in this study utilizes the triangulation method (Carter, Bryant-Lukosius, Dicenso, Blythe, & Neville, 2014), involving interviews with electronic medical records users, document analysis, and field observations. This qualitative research aims to explore the experiences of the MMR to EMR transition process in a hospital setting, focusing on the perspectives of key actors involved in the implementation of EMR. Reflections from the researchers occurred when interactions with research subjects revealed diverse views regarding the MMR to EMR transition, which involves not only the implementation of new technology but also changes in work culture and operational processes.

RESULTS

Table 1. Characteristics of partisipan's (n=4)

Kode participants	Age	Gender
P1	22	Female
P2	25	Male
P3	28	Male
P4	39	Male

Hospital TK.III. dr. R. Soeharsono Banjarmasin has only been undergoing the RMM to ESDM transformation process for six months. The EMR used contains all patient records. The EMR is accessed by the clinician using a tablet or computer using an account and password. This research identifies five themes: Benchmarking, Finding suitable service platforms, EMR facilities, EMR training and Implementation of EMR. The following is a thematic analysis matrix 1:

Matrix 1. Synthesis of data

Keywords	Category	Sub-theme	Theme
"Visited Anshari Saleh Hospital to learn about and discuss EMR"/P2	Learning about EMR		
"Learned from Anshari Saleh Hospital"/P3			
"Conducted a comparative study at a hospital that has implemented EMR" /P1	Observing EMR in other hospitals	**Benchmarking**	
"The medical record team conducted a comparative study at			

Anshari Saleh Hospital" /P4			
"Surveyed several service platforms and then found a suitable one" /P2	Surveying a service platforms	Selecting a service platform	**Finding a Suitable service platforms**
"Found a service platform that met our requirements, and the contract can be extended for another 5 years"/P4			
"During the comparative study, I saw that their system was easy, so we chose that service platforms "/P3	Recommendations from other hospitals		
"Recommended by other hospitals that have implemented EMR to use the service platforms they use" /P3			
"In the past, we only had laptops; now, some use computers and tablets"/P3	Providing complementary facilities for EMR	Provision of EMR Facilities and Infrastructure	**EMR Facilities**
"Added routers, laptops, and tablets to support optimal EMR functionality" /P3			
"Prepared all necessary facilities to support EMR, considering recommendations from the service platforms "/P4			
"Increased internet capacity"/P2	Improving internet capacity		
"Chose a reputable service platform already used by several large hospitals" /P4	Quality service platforms	service platforms	
"The service platforms are widely used by other hospitals, which is why we chose them "/P3			
"Guided by the service platforms for 3 months to learn how to use EMR" /P1	Enhancing basic knowledge of EMR	Training for the RME Unit	**RME Training**

"After being trained by the service platforms, we switched to the inpatient and outpatient units to teach how to use EMR" /P2			
"Visited every room for one month to introduce the EMR system"/P3	Sharing knowledge with all hospital units about the implementation of EMR	Training for All Units in the Hospital	
"Conducted rotational training for all units with assistance from the service platforms during the training"/P4			
"Implemented EMR immediately after completing the service platforms training"/P1	EMR training		
"After our visits, all units understood, so we implemented it immediately"/P3			
"Implemented EMR together with inpatient and outpatient units"/P2	Direct implementation	**Implementation of EMR**	
"Inpatient and outpatient units started using EMR simultaneously after completing the training"/P3			
"Implemented EMR simultaneously because our hospital was capable of doing so"/P4			

Matrix 2 explains the synthesis of research data using thematic analysis. Matrix 2 explains the MMR to ESDM transformation process. The process of moving MMR to EMR begins with looking for service platforms, selecting service platforms, after training and improving RME facilities and services. The process of transferring MMR to EMR is proceeding step by step and continuously.

DISCUSSION

In the early 21st century the use of EMR has become a major trend in healthcare, replacing manual medical record systems (Blumenthal & Tavenner, 2010). This transition brings about significant changes in health information management. The distinctive feature of EMR usage is that it facilitates hospital services (Arianti, Agushybana, & Widodo, Puji, 2023). EMR has proven to enhance patient satisfaction by increasing effective communication between physicians and patients (Lubis, Ningtyas, & Nurfillaeli, 2023).

EMR can streamline the process of storing and distributing medical information (Rathert, Mittler, Banerjee, & McDaniel, 2017), improve accuracy, organization, and presentation of biomedical data by encouraging collection, distribution, and reporting (Graetz et al., 2014), simultaneous collection of patient data, aid interdisciplinary and intradisciplinary team communication, and support clinical decision-making (Jedwab, Manias, Hutchinson, Dobroff, & Redley, 2022). Additionally, doctors and nurses can easily access patient data by logging in using a password when using EMR (Arianti et al., 2023). Ensuring the use of EMR is crucial to protecting patient data privacy (Afzal & Arshad, 2021).

This research found that EMR training is essential to prepare for EMR usage. This view is supported by other studies stating that training on EMR plays a crucial role in preparing for its implementation (Wirajaya & Dewi, 2020). Similar findings suggest that EMR training can stimulate hospitals to migrate from manual medical record data to electronic records (Ningsih, Purwanti, Sevtiyani, Santoso, & Ma'arif, 2022).

Accelerating the implementation of EMR can be done by using service platforms that provide EMR application services. Regulations for the use of service platforms are regulated by Regulation of the Republic of Indonesia Number 24 of 2022 regarding Medical Records, which mandates the use of service platforms (Ministry of Health of the Republic of Indonesia, 2022). Service platform providers can offer ready-to-use EMR applications to facilitate implementation. Hospitals without EMR applications cannot implement EMR (Zumrotussa'adah & Retnowati, 2023). Other studies also mention that developing an in-house EMR system can slow down its implementation (Gemilang, Kristina, & Amarulloh, 2022).

Using third-party service platforms can make EMR data more secure by enhancing privacy and confidentiality (Ulfa & Yuspin, 2023). Other studies also mention that the implementation of EMR requires the involvement of service platforms for software updates, network connections, and downloading test results (Magrabi et al., 2016). Additionally, the training provided by service platforms is crucial for achieving optimal impact in EMR

implementation (Saleem & Herout, 2018) and can help solve issues in the transition from MMR to EMR (Abramson et al., 2012).

Supporting facilities for EMR, such as computers, laptops, tablets, and networks, play a crucial role in implementing EMR. The supporting facilities for EMR require a special budget, in line with other studies stating that a specific budget must be prepared to operate EMR (Pratama & Darnoto, 2017); (Sudirahayu & Harjoko, 2017); (Yoga, Jaka, & Yanti, 2021). Furthermore, computers, laptops, tablets, and networks must be adequate for EMR to function (Hidayat & Sari, 2017); (Riyanti, Arfan, & Zuana, 2023).

CONCLUSIONS

This research reveals five main themes in exploring the experiences of hospitals transitioning from MMR to EMR: Benchmarking, Finding suitable service platforms, EMR facilities, EMR training and Implementation of EMR. EMR training is emphasized as a crucial step in preparing for EMR usage, in line with regulations that mandate EMR service platforms. The use of external service platforms is recognized as a step that can improve the security of patient data and privacy. Good facility support and training are the keys to success in implementing EMR. However, the success of EMR implementation also depends on the availability of adequate supporting facilities such as computers, laptops, tablets, and networks. The findings of this research provide important insights for hospitals and stakeholders to understand the challenges in transitioning from manual medical records to EMR.

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