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Evaluating registration staff understanding of electronic medical record use

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ABSTRACT

This study aimed to evaluate the understanding of registration staff regarding the use of Electronic Medical Records (EMR) at Puskesmas Bringin, a primary healthcare center in Semarang Regency. Despite the growing emphasis on digital transformation in health services, the success of EMR implementation largely depends on how well frontline staff comprehend and engage with the system. Using a qualitative descriptive method, data were collected through in-depth interviews and direct observations with selected registration officers. The findings revealed varying levels of understanding among staff, influenced by differences in digital literacy, training exposure, and system accessibility. Some staff demonstrated strong conceptual and operational knowledge of EMR, while others relied on peer support or manual records due to uncertainty in system navigation. Technical barriers and limited organizational support further impacted their ability to fully utilize EMR functions. The study concluded that improving staff understanding requires targeted training, user-friendly system design, and continuous mentoring. These efforts are essential to ensure the successful integration of EMR in primary healthcare services and to support better health data management at the grassroots level.

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INTRODUCTION

The increasing digitization of healthcare systems has transformed the way patient data is managed, accessed, and utilized. In Indonesia, the Ministry of Health has encouraged the widespread implementation of Electronic Medical Records (EMR) in primary care facilities, including Puskesmas (community health centers), to improve service quality, data accuracy, and health program monitoring. While infrastructure and software adoption have progressed, the human aspect—especially user comprehension—remains a critical determinant of success (Utoyo, 2020).

At the front line of EMR use in Puskesmas are the registration staff, who serve as the entry point for patient data into the system. Their understanding of EMR functionalities, protocols, and

navigation flows directly affects the completeness, timeliness, and reliability of digital records. Inconsistent or inadequate understanding may result in incomplete data entry, duplication, or reliance on manual records, thereby undermining the core goals of EMR systems (Ratnaningsih & Santoso, 2024)(Iskandar et al., 2024).

Puskesmas Bringin, located in Semarang Regency, has introduced EMR into its daily operations. However, anecdotal observations and informal reports suggested that not all registration officers had received adequate training or support to fully grasp the EMR system. Some staff were confident in using the platform, while others still hesitated or reverted to paper-based methods during high workload situations or system disruptions (Irawan & Perindustrian, 2020)(AGUNG, 2024).

Given the vital role of registration staff in ensuring accurate health information input, this study aimed to evaluate their level of understanding regarding EMR usage (Ariani, 2023)(Listautin, Nengsi, & Irwandi, 2025). A qualitative descriptive approach was employed to explore their perceptions, challenges, and experiences in using EMR. The findings are expected to identify knowledge gaps, support needs, and areas for improvement in digital literacy at the primary care level (Vanchapo et al., 2024)(Firdaus, 2024).

This study contributes to the body of knowledge by highlighting the human dimension of digital transformation in healthcare, particularly within the often-overlooked operational level. It emphasizes the importance of building user-centered implementation strategies and sustaining digital health systems through continuous capacity building.

RESEARCH METHOD

This study employed a qualitative descriptive method to explore the understanding of registration staff in using Electronic Medical Records (EMR) at Puskesmas Bringin, Semarang Regency. A qualitative approach was chosen to gain deep insights into user experiences, contextual barriers, and the organizational environment surrounding EMR implementation. The design emphasized capturing the subjective perceptions of frontline staff who interact with EMR systems daily.

Research Design

The research followed a case study design with purposive sampling to select eight participants directly involved in patient registration and EMR operations. These included doctors, nurses, a midwife, pharmacist, laboratory staff, and a medical record officer. Data were collected through in-depth interviews, direct observations, and documentation review. Interviews were semi-structured and guided by a validated protocol focusing on EMR use, challenges faced, training experiences, and infrastructure conditions.

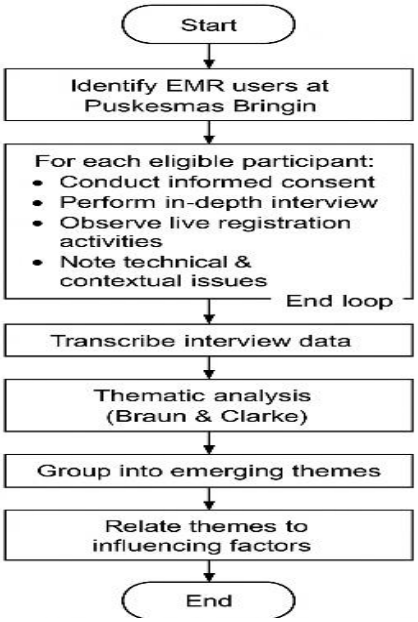

Figure 1. Research procedure flowchart

This flowchart illustrates the sequential stages of the research process used to evaluate registration staff understanding of Electronic Medical Record (EMR) use at Puskesmas Bringin. The study began with the identification of eligible EMR users, focusing on staff directly involved in patient registration.

For each participant, the researcher obtained informed consent, conducted in-depth interviews, and performed direct observations of daily registration activities. During these sessions, both technical and contextual issues were documented to ensure a comprehensive understanding of user experiences.

After data collection, all interview recordings were transcribed and analyzed thematically using Braun and Clarke's framework. Emerging themes were identified, grouped, and interpreted in relation to influencing factors such as training exposure, digital literacy, infrastructure, and workflow support. The process concluded with the formulation of conclusions and practical recommendations aimed at improving EMR comprehension and usage among registration staff.
This visual representation enhances transparency in methodological design and supports the rigor of the qualitative approach employed in this study.

Data Collection and Instruments

Data were collected between January and June 2025. Instruments included an interview guide, observation checklist, and document review template. Interviews were audio-recorded and later transcribed for thematic coding. Observations were conducted using a structured sheet to capture how staff interacted with the EMR system in real-time, particularly during registration processes.

Data Analysis

Data analysis followed thematic analysis procedures as outlined by Braun and Clarke (2006). It began with data familiarization, followed by initial coding, theme development, and interpretation. Each finding was aligned with specific influencing factors such as digital literacy, training experience, system usability, workload, and infrastructure quality. The analysis produced six dominant themes that captured the overall understanding and challenges faced by registration staff.

Validity and Trustworthiness

To ensure credibility, triangulation of data sources and methods was employed. Interview data were cross-verified with observational notes and relevant documents such as training logs and EMR usage reports. Member checking was conducted with selected informants to confirm interpretations. Ethical clearance was obtained, and all participants signed informed consent prior to involvement.

RESULTS AND DISCUSSIONS

The results of this study are presented in a narrative format to describe the level of understanding and challenges experienced by registration staff in using Electronic Medical Records (EMR) at Puskesmas Bringin. Thematic analysis of interviews and observations led to the identification of six dominant themes that reflect the staff's experiences: conceptual understanding, system navigation skills, training exposure, perceived usefulness, technical constraints, and organizational support.

Conceptual Understanding of EMR

Most participants demonstrated a general awareness of what EMR is and its purpose in improving health service delivery. However, the depth of understanding varied. Some staff associated EMR only with digital patient registration, without a broader grasp of its functions such as tracking treatment history or supporting clinical decisions. This limited conceptual view may hinder optimal system utilization, as users do not explore features beyond their routine functions.

System Navigation Skills

Observations revealed that navigation skills among staff were inconsistent. For example, during live registration, only 3 out of 8 participants could efficiently enter complete patient data without assistance. Others required peer support or had to cross-check with paper records. This was particularly evident when dealing with returning patients, where historical data retrieval posed difficulties. The lack of familiarity with menu structures and search functions contributed to delays and data entry errors.

Training Exposure and Learning Sources

The study found that formal training on EMR was either lacking or insufficient. Only 2 of the 8 informants reported attending a structured training session. Most of the learning occurred informally through peer guidance or trial-and-error during work shifts. One participant stated, "I just followed what my colleague did. There was no clear guideline." This reliance on informal learning pathways resulted in inconsistent knowledge levels and operational practices.

Perceived Usefulness and Motivation

Despite challenges, many staff recognized the potential of EMR to streamline registration, reduce paperwork, and facilitate faster reporting. However, perceived usefulness was often limited by the frustration of system errors or slow performance. For example, one informant noted, "When the system lags, I prefer writing manually to avoid making patients wait too long." Such perceptions reduce motivation and reinforce fallback to manual methods.

Technical Constraints

Several technical issues emerged as barriers to consistent EMR use. System lags were reported by 6 out of 8 participants, particularly during peak hours. Inconsistent internet connectivity and delayed data synchronization were also observed. Moreover, the absence of a technical support team on-site meant that minor glitches often remained unresolved for days. These disruptions affected both user confidence and the completeness of digital records.

Organizational Support and Policy Clarity

Another recurring theme was the lack of institutional policy clarity regarding EMR standard operating procedures (SOPs). Although EMR had been implemented, there were no

updated SOPs to guide its use. This led to varied practices across shifts and among personnel. Furthermore, regular monitoring and evaluation of EMR use were absent, making it difficult to track progress or identify areas for improvement.

To provide a clearer picture of the findings, Table 1 summarizes the distribution of themes across participants:

Table 1. Summary of themes identified by participant (n = 8)

Participant	Conceptual Understanding	Navigation Skills	Attended Training	Perceives EMR as Useful	Reported Technical Issues	SOP Awareness
P1	Moderate	Good	No	Yes	Yes	No
P2	Low	Poor	No	No	Yes	No
P3	Moderate	Moderate	Yes	Yes	Yes	Yes
P4	High	Good	Yes	Yes	No	Yes
P5	Moderate	Moderate	No	Yes	Yes	No
P6	Low	Poor	No	No	Yes	No
P7	High	Good	No	Yes	No	No
P8	Moderate	Moderate	No	Yes	Yes	No

The data show a pattern of low training exposure and limited SOP awareness, which correlate with weak navigation skills and inconsistent EMR usage. Staff who had formal training and better understanding were more likely to perceive EMR positively and use it more effectively. This supports the notion that targeted education and clear policies are critical for successful digital system adoption.

In summary, the study highlighted that understanding and usage of EMR among registration staff at Puskesmas Bringin were influenced by multiple intertwined factors. Strengthening institutional support, ensuring consistent training, and improving system infrastructure are essential steps to enhance EMR utilization in primary healthcare settings.

CONCLUSION

This study set out to explore the understanding of registration staff in using Electronic Medical Records (EMR) at Puskesmas Bringin, grounded in the expectation that human factors play a vital role in the success of digital health system adoption. As presented in the introduction, comprehension, training, and institutional readiness were suspected to influence EMR utilization—and the findings confirmed these assumptions.

The research revealed that while most staff recognized the value of EMR in improving service efficiency, their level of understanding and system navigation skills varied significantly. Key barriers included minimal training exposure, inconsistent technical support, unclear standard operating procedures, and system performance issues. These challenges resulted in uneven implementation, with some staff reverting to manual methods during technical or operational difficulties.

The conclusion highlights the urgent need for structured training programs, accessible user manuals, and proactive institutional support to strengthen digital literacy among frontline health workers. Future research is encouraged to examine EMR adoption across other units and regions, explore the role of leadership in digital transformation, and evaluate the long-term impact of continuous mentoring on system use and data quality. These directions are vital for enhancing digital health governance and ensuring that EMR systems truly empower—not burden—the people who use them.

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