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Level of Knowledge and Motivation of Health Workers in the Implementation of EMR at Primary Care

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Abstract
In Indonesia, healthcare facilities have been mandated to adopt Electronic Medical Records (EMR) by 2023. The possession of knowledge and motivation by health workers was identified as a pivotal factor in the successful implementation of EMRs. The aim of this study is to identify the level of knowledge and motivation of health workers with regard to the implementation of EMRs. This is a descriptive and quantitative study that used a cross-sectional study approach. The respondents comprised 39 health workers at Puskesmas Demak II who were administered a questionnaire to ascertain their level of knowledge and motivation regarding EMR implementation. The findings indicated that health workers at Puskesmas Demak II exhibited a commendable level of knowledge (74.4%) regarding EMR, yet their motivation to implement it was found to be suboptimal (51.3%). The Health Office has conducted socialisation of EMR implementation, but Puskesmas are not yet fully prepared in terms of human resources, information system management, budget, internet network infrastructure, and technology. It is the responsibility of the government to ensure the provision of adequate training and technical assistance.

Keywords: Electronic Medical Records, health workers, knowledge, motivation

INTRODUCTION

Electronic Medical Records (EMR) are becoming an important part of primary health care to ensure that services to the community are effective, efficient, and of high quality. In almost all countries, the use of RME has been widely adopted[1]. In Indonesia, the commitment to digital transformation in healthcare is reflected in government policy through the Minister of Health Regulation No. 24 Year 2022 on Medical Records, which requires all healthcare facilities to fully implement RME starting in 2023. Based on the Minister of Health Regulation No. 24 Year 2022 on Medical Records, it states that all health care facilities, including Puskesmas, are required to implement RME by 2023. This policy marks a strategic step in the digitization of health services in Indonesia, but its implementation faces various challenges, especially related to the readiness of human resources and technological infrastructure at the primary care level[2].

Previous survey results show that the implementation of Electronic Medical Records in first-level health care facilities in Indonesia is still relatively low. Of the total 9,831 Puskesmas spread across

[1] Habtamu Setegn Ngusie et al., "Healthcare Providers' Readiness for Electronic Health Record Adoption: A Cross-Sectional Study during Pre-Implementation Phase," *BMC Health Services Research* 22, no. 1 (2022): 1–12, https://doi.org/10.1186/s12913-022-07688-x.
[2] Neng Sari Rubiyanti, "Penerapan Rekam Medis Elektronik Di Rumah Sakit Di Indonesia: Kajian Yuridis," *ALADALAH: Jurnal Politik, Sosial, Hukum Dan Humaniora* 1, no. 1 (2023): 179–87, https://doi.org/10.59246/aladalah.v1i1.163.

Indonesia, as many as 4,807 of them have not implemented the EMR system[3]. This finding reflects a major challenge in the process of digitizing health services, especially at the Puskesmas level, which is at the forefront of the national health care system[4]. Research from the Center for Indonesia's Strategic Development Initiatives (CISDI) reinforces the fact of low adoption of RME in Indonesia. Only about 8% of the national medical record system fully relies on RME, while most still rely on manual or mixed systems. As many as 43% of health institutions use a combination of manual and electronic systems, and another 49% still fully use manual systems[5]. This reliance on manual systems not only slows down the service process, but also increases the risk of recording errors and loss of patient data, thus demonstrating the urgency of accelerating the implementation of RME across the board[6].

Barriers to the implementation of Electronic Medical Records (EMRs) can generally be categorized into five main types: technical, organizational, personal, financial, and legal[7]. Research by Jimma and Enyew (2022) found that technical and individual-level challenges—such as resistance to change—were more prevalent compared to other types of barriers[8]. In primary healthcare settings, the adoption of EMRs has encountered numerous obstacles, including limited knowledge among healthcare personnel regarding the systems in use, inadequate infrastructure readiness, and low motivation among healthcare workers to integrate the technology into daily practice.[9]. Similarly, a study by Nurrahma et al. (2023) emphasized that human resources remain the most critical factor influencing the success of EMR implementation[10].

The findings from a preliminary study, conducted through interviews with the Administrative Coordinator of Puskesmas Demak II, indicated that not all healthcare and non-healthcare personnel felt adequately prepared to operate the Puskesmas Management Information System (SIMPUS), which is intended to be integrated with the Ministry of Health's SATU SEHAT platform. A commonly held perception regarding the complexity of new technology was identified as a psychological barrier, contributing to a decline in motivation to fully adopt and implement the digital system. Furthermore, limitations in the supporting infrastructure particularly in terms of internet connectivity were also observed, which has a direct impact on the effectiveness and sustainability of the Electronic Medical Records (EMR) implementation process.

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[3] R Wati, P D Igiany, and J Pertiwi, "Analisis Kesiapan Implementasi Rekam Medis Elektronik Di Puskesmas Baki," *PREPOTIF …*, 2024, https://journal.universitaspahlawan.ac.id/index.php/prepotif/article/view/26515.

[4] Asnawi Abdullah, *Transformasi Sistem Kesehatan Nasional*, *Prosiding Seminar Kesehatan Masyarakat*, vol. 1 (Kementerian PPN/Bappenas, 2023), https://doi.org/10.26714/pskm.v1ioktober.271.

[5] Centre for Indonesia's Strategic Development Initiatives, "CISDI Health Outlook 2023: Saatnya Berubah," 2023.

[6] Nagham Faris et al., "Electronic Medical Record Implementation in the Emergency Department in a Low-Resource Country: Lessons Learned," *PLoS ONE* 19, no. 3 March (2024): 1–13, https://doi.org/10.1371/journal.pone.0298027.

[7] Zefan Adiputra Golo et al., "Implementation of Electronic Medical Records at Primary Care in Semarang City Region: An Analysis of Individual and Organisational Determinants," *Jurnal Penelitian Pendidikan IPA* 9, no. 11 (2023): 9985–91, https://doi.org/10.29303/jppipa.v9i11.5627.

[8] Bahiru Legesse Jimma and Daniel Berhanie Enyew, "Barriers to the Acceptance of Electronic Medical Records from the Perspective of Physicians and Nurses:A Scoping Review," *Informatics in Medicine Unlocked* 31, no. May (2022): 100991, https://doi.org/10.1016/j.imu.2022.100991.

[9] Teresa Reis et al., "Barriers and Facilitators to Implementing a Continuing Medical Education Intervention in a Primary Health Care Setting," *BMC Health Services Research* 22, no. 1 (2022): 1–13, https://doi.org/10.1186/s12913-022-08019-w.

[10] Alya Nabila Nurrahma et al., "Electronic Medical Records in First Level Health Facilities," *Review of Primary Care Practice and Education (Kajian Praktik Dan Pendidikan Layanan Primer)*, 2023, 22–26.

A critical gap identified in these findings lies in the disconnect between technical readiness and human resource preparedness. While prior research has predominantly focused on technological capabilities and policy-level considerations, few studies have examined the nuanced interplay between knowledge and individual motivation among frontline health workers within the context of integrating EMR into the national SATU SEHAT framework. Yet, the successful adoption of health information systems depends not only on the availability of digital infrastructure but also on the cognitive competence and affective commitment of its end-users. This study aims to assess the level of knowledge and motivation among healthcare workers at Puskesmas Demak II in relation to the implementation of EMR.

METHOD

This study is a descriptive quantitative research with a cross-sectional design. It was conducted to provide an overview of the knowledge and motivation levels of health workers regarding the implementation of Electronic Medical Records (EMR) at a specific point in time. The study took place in March 2025 at Puskesmas Demak II. The population consisted of all health workers directly involved in providing services to patients or the community. Inclusion criteria included health workers who had experience using the EMR system, either fully or partially, in their routine healthcare activities. A total sampling technique was used, resulting in 39 respondents who met the criteria. The sample included various professional roles such as general practitioners, dentists, nurses, midwives, medical record staff, health promotion personnel, analysts, pharmacists, and nutritionists.

Data collection was carried out using a closed-ended questionnaire that had undergone validity and reliability testing to ensure the instrument's suitability. The questionnaire was previously tested in a comparable setting with similar characteristics to the main research site. Data were analysed using univariate analysis to describe the frequency distribution and percentages of respondents' characteristics, knowledge levels, and motivation regarding EMR implementation. The analysis was performed using SPSS version 22.

RESULT & DISCUSSION

Validity and reliability tests were conducted to ensure that the research instrument was appropriate and accurate for measuring the intended variables. The validity test used the corrected item-total correlation method, and the results showed that all questionnaire items had an r-count value greater than the r-table value (0.349) at a significance level of $\alpha = 0.05$. This indicates that all items were considered valid. The reliability test was carried out using the Cronbach's alpha method, and all variables had alpha values above 0.70, which indicates strong internal consistency. Based on these results, it can be concluded that the questionnaire used in this study is both valid and reliable, making it suitable for consistently measuring the knowledge and motivation of health workers.

Demographic Characteristics

Based on the results of the analysis based on the characteristics of respondents including age, gender, education level, employment status and length of work at the Demak II Health Center, the data obtained are as in the table below:

Table 1. Respondent Demographics

Characteristics	Category	F	%
Age	24 - 29 years	9	22,5%
	30 - 39 years old	12	31,4%
	40 - 49 years	13	33.3%
	> 50 years	5	12,8%
Gender	Female	32	82,1%
	Male	7	17,9%
Education Level	D3 Health Analyst	1	2,6%
	D4 Health Analyst	1	2,6%
	D3 Midwifery	9	22,5%
	D4 Midwifery	6	15,4%
	Master of Health Law	1	2,6%
	D4 Nursing	3	7,7%
	D3 Nursing	1	2,6%
	D3 Sanitarian	1	2,6%

	D3 Nutritionist	1	2,6%
	S1 Administration	1	2,6%
	Bachelor of Pharmacy	2	5,1%
	General practitioner	6	15,4%
	D4 Dental Health	2	5,1%
	High School	4	10,3%
Employment Status	Civil Servants	24	61,5%
	Non-civil servants	15	38,5%
Length of Work Period	1 - 5 years	16	41,0%
	6 - 10 years	11	28,2%
	> 10 years	12	30,8%

Sources: Primary Data, 2025

Based on Table 1, most respondents in this study were within the productive age range, specifically 30–39 years (31.4%) and 40–49 years (33.3%). This age group is considered to have a strong potential to adapt to innovations in health information systems[11]. The majority of respondents were female (82.1%), reflecting the predominance of women in the workforce structure at Puskesmas Demak II. In terms of education, most respondents were university graduates (89.7%), indicating a sufficient level of academic competence to understand and operate electronic medical record (EMR) systems[12]. Regarding employment status, 61.5% of respondents were civil servants, who generally enjoy greater job stability and better access to government-sponsored training programs[13]. As for work experience, 41.0% of respondents had been employed for 1–5 years, while 30.8% had more than 10 years of experience. This indicates a combination of both newer and more senior staff, which could be beneficial in the EMR implementation process, as their complementary strengths may support collaboration and knowledge sharing[14].

Cross-Tabulation of Respondent Characteristics and Knowledge Level

The results of the cross-tabulation analysis between the characteristics of respondents and the level of knowledge are shown below:

Table 2. Cross tabulation of respondent characteristics with knowledge level

Variables	Knowledge			
	Low		High	
	n	%	n	%
Age				
24 - 29 years	0	0.0	8	20.5
30 - 39 years old	6	15.4	7	17.9
40 - 49 years	3	7.7	10	25.6
> 50 years	1	2.6	4	10.3
Gender				
Women	6	15.4	26	66.7
Male	4	10.3	3	7.7
Education Level				
Higher Education	7	17.9	28	71.8
High School	3	7.7	1	2.6

[11] Raya Sawalha et al., "Factors Influencing Health Information System Acceptance: A Cross-Sectional Study from a Low-Middle-Income Country," *Frontiers in Health Services* 4, no. September (2024): 1–7, https://doi.org/10.3389/frhs.2024.1458096.

[12] Wesley Barker et al., "The Evolution of Health Information Technology for Enhanced Patient-Centric Care in the United States (Preprint)," *Journal of Medical Internet Research* 26 (2024), https://doi.org/10.2196/59791.

[13] Md Khalid Hossain et al., "An Exploratory Study of Electronic Medical Record Implementation and Recordkeeping Culture: The Case of Hospitals in Indonesia," *BMC Health Services Research* 25, no. 1 (2025), https://doi.org/10.1186/s12913-025-12399-0.

[14] Amir Torab-Miandoab et al., "Interoperability of Heterogeneous Health Information Systems: A Systematic Literature Review," *BMC Medical Informatics and Decision Making* 23, no. 1 (2023): 1–13, https://doi.org/10.1186/s12911-023-02115-5.

Employee Status				
Civil Servant	4	10.3	20	51.3
Non-Civil Servant	6	15.4	9	23.1
Length of Work Period				
1 - 5 years	2	5.1	14	35.9
6 - 10 years	4	10.3	7	17.9
>10 years	4	10.3	8	20.5

The cross-tabulation results between respondent characteristics and knowledge levels showed that all respondents in the 24–29 age group had a high level of knowledge (20.5%). This suggests that younger health workers may be more open and adaptable to new information and technologies, such as the EMR system. In contrast, among older age groups—specifically those aged 40–49 years and over 50—there were still respondents with low knowledge levels (7.7% and 2.6%, respectively), although most still had high knowledge.

In terms of gender, a higher proportion of female respondents had a high level of knowledge (66.7%) compared to male respondents (7.7%). This may reflect differences in training opportunities or motivation to learn new systems. For education level, respondents with a university education made up the majority of those with high knowledge (71.8%), while most respondents with only a high school education were in the low knowledge category (7.7%). This confirms that education plays an important role in understanding health information systems.

Looking at employment status, civil servants showed a higher proportion of high knowledge (51.3%) than non-civil servants (23.1%). This could be due to better access to training and official information. Work experience also showed a notable trend: health workers with 1–5 years of experience had the highest percentage of high knowledge (35.9%), suggesting that newer staff may be more receptive to health technology innovations compared to those with more than 10 years of experience (20.5%).

Cross-Tabulation Respondent Characteristics and Motivation Level

The results of the cross-tabulation analysis between the characteristics of respondents and motivation in implementing electronic medical records at the Puskesmas can be seen in table 3.

TABLE 3. Cross-tabulation of Respondent Characteristics with Motivation

Variables	Motivation			
	Low		High	
	n	%	n	%
Age				
24 - 29 years	2	5.1	6	15.4
30 - 39 years old	5	12.8	8	20.5
40 - 49 years	8	20.5	5	12.8
> 50 years	4	10.3	1	2.6
Gender				
Women	15	38.5	17	43.6
Male	4	10.3	3	7.7
Education Level				
Higher Education	17	43.6	18	46.2
High School	2	5.1	2	5.1
Employment Status				
Civil Servants	15	38.5	9	23.1
Non-Civil Servants	4	10.3	11	28.2
Length of Service				
1 - 5 years	6	15.4	10	25.6
6 - 10 years	5	12.8	6	15.4
>10 years	8	20.5	4	10.3

Based on Table 3, most health workers who had low motivation to implement Electronic Medical Records (EMR) were in the 40–49 years (20.5%) and over 50 years (10.3%) age groups. This may indicate that older workers are more likely to resist changes, which can affect their motivation to use new systems. On the other hand, health workers aged 24–29 and 30–39 years showed higher motivation (15.4% and 20.5%), suggesting that younger staff tend to be more open to using technology.

In terms of gender, female health workers had a higher percentage of high motivation (43.6%) than males (7.7%). This difference may relate to roles and responsibilities in managing digital-based administrative tasks in the workplace. Education level also made a difference—college graduates

showed more high motivation (46.2%) than those with only a high school education (5.1%). This suggests that education helps shape a person's readiness to accept changes in work systems.

In terms of employment status, more non-civil servant workers (28.2%) than civil servant workers (23.1%) reported being highly motivated. This may be due to a more flexible working environment and a stronger drive for achievement among contract workers. Finally, based on work experience, those with 1-5 years of service had the highest level of motivation (25.6%), followed by the 6-10 years group (15.4%). In contrast, those with more than 10 years of experience had a higher percentage of low motivation (20.5%), which may be due to difficulties adjusting to the new system after working with the manual system for a long time.

The knowledge level of health workers—including doctors, nurses, and other healthcare professionals—plays a critical role in the successful implementation of Electronic Medical Record (EMR) systems. The findings of this study indicate that the majority of health workers at Puskesmas Demak II have a high level of knowledge about EMRs (74.4%), although 25.6 percent were found to have low knowledge. Those with lower knowledge levels were typically individuals with only a secondary education background and who had never attended EMR-related training or socialization activities.

This finding was consistent with previous studies, which highlighted that adequate knowledge is a key determinant in the acceptance and effective use of health information systems[15]. In this context, it should be emphasised that cognitive ability and a fundamental understanding of health technology are essential to ensure a smooth transition from manual to digital systems[16] [17]. In addition, human resource capacity is a major factor influencing the successful implementation of EMR systems, especially in developing countries[18] [19].

In addition to knowledge, motivation of health workers is also an important element in the RME adoption process. This study found that more than half of the respondents (51.3%) showed a low level of motivation in implementing RME. This finding was reinforced through interviews with Puskesmas leaders who revealed that lack of training and lack of socialisation from the local Health Office were the main factors for low motivation. Inadequate infrastructure, such as limited hardware and internet network, also contributed to the low internal motivation of health workers in accepting the new system. Intrinsic motivation plays an important role in determining individual commitment in the use of health technology, especially in the context of work that demands high adaptability[20].

Health workers, especially those who have been accustomed to manual record-keeping systems, perceive RME as a complicated and burdensome system, especially due to the increased

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[15] Sisay Maru Wubante et al., "Healthcare Professionals' Knowledge, Attitude and Its Associated Factors toward Electronic Personal Health Record System in a Resource-Limited Setting: A Cross-Sectional Study," *Frontiers in Public Health* 11 (2023), https://doi.org/10.3389/fpubh.2023.1114456.

[16] Karyl Claire Derecho et al., "Technology Adoption of Electronic Medical Records in Developing Economies: A Systematic Review on Physicians' Perspective," *Digital Health*, 2024, https://doi.org/10.1177/20552076231224605.

[17] D. Morquin, "Legitimate Resistance without Technophobia: Analysis of Electronic Medical Records Impacts on the Medical Profession," *Revue de Medecine Interne*, 2020, https://doi.org/10.1016/j.revmed.2020.03.011.

[18] Christie Divine Akwaowo et al., "Adoption of Electronic Medical Records in Developing Countries—A Multi-State Study of the Nigerian Healthcare System," *Frontiers in Digital Health* 4, no. November (2022): 1–18, https://doi.org/10.3389/fdgth.2022.1017231.

[19] Win Min Thit et al., "User Acceptance of Electronic Medical Record System: Implementation at Marie Stopes International, Myanmar," *Healthcare Informatics Research* (synapse.koreamed.org, 2020), https://doi.org/10.4258/hir.2020.26.3.185.

[20] Gepke L. Veenstra et al., "Electronic Health Record Implementation and Healthcare Workers' Work Characteristics and Autonomous Motivation—a before-and-after Study," *BMC Medical Informatics and Decision Making* 22, no. 1 (2022): 1–15, https://doi.org/10.1186/s12911-022-01858-x.

documentation burden[21]. Technical and administrative difficulties can demotivate and lead to burnout[22]. Limited computer skills and typing speed are technical barriers that health workers often face in entering data into the RME system[23]. Considering these findings, it is important for Puskesmas management and health offices to not only focus on improving technical knowledge, but also building the motivation and psychological readiness of health workers through continuous training, technical assistance, and provision of adequate infrastructure.

CONCLUSION

This study concludes that while the majority of health workers at Puskesmas Demak II possess a high level of knowledge regarding Electronic Medical Records (EMR), their level of motivation to implement the system remains relatively low. This discrepancy highlights the need for greater emphasis not only on technical competence but also on fostering psychological readiness and user confidence. The study also identifies age, education level, and length of service as influential factors in knowledge and motivation levels. However, this research is limited by its small sample size and focus on a single primary healthcare facility, which may not fully represent the broader context of EMR implementation in Indonesia. Future studies should involve larger, more diverse populations and explore the effectiveness of targeted interventions such as training programs and motivational strategies to enhance the readiness of health workers for digital transformation in healthcare systems.

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REFERENCES

Abdullah, Asnawi. *Transformasi Sistem Kesehatan Nasional. Prosiding Seminar Kesehatan Masyarakat*. Vol. 1. Kementerian PPN/Bappenas, 2023. https://doi.org/10.26714/pskm.v1ioktober.271.

Akwaowo, Christie Divine, Humphrey Muki Sabi, Nnette Ekpenyong, Chimaobi M. Isiguzo, Nene Francis Andem, Omosivie Maduka, Emem Dan, Edidiong Umoh, Victory Ekpin, and Faith Michael Uzoka. "Adoption of Electronic Medical Records in Developing Countries—A Multi-State

[21] Rebecca M. Jedwab et al., "Change in Nurses' Psychosocial Characteristics Pre- and Post-Electronic Medical Record System Implementation Coinciding with the SARS-CoV-2 Pandemic: Pre- and Post-Cross-Sectional Surveys," *International Journal of Medical Informatics* 163 (2022), https://doi.org/10.1016/j.ijmedinf.2022.104783.

[22] Rebecca M. Jedwab et al., "Nurse Motivation, Engagement and Well-Being before an Electronic Medical Record System Implementation: A Mixed Methods Study," *International Journal of Environmental Research and Public Health* (mdpi.com, 2021), https://doi.org/10.3390/ijerph18052726.

[23] Philomena N. Ngugi, Martin C. Were, and Ankica Babic, "Users' Perception on Factors Contributing to Electronic Medical Records Systems Use: A Focus Group Discussion Study in Healthcare Facilities Setting in Kenya," *BMC Medical Informatics and Decision Making*, 2021, https://doi.org/10.1186/s12911-021-01737-x.

Study of the Nigerian Healthcare System." *Frontiers in Digital Health* 4, no. November (2022): 1–18. https://doi.org/10.3389/fdgth.2022.1017231.

Barker, Wesley, Wei Chang, Jordan Everson, Meghan Gabriel, Vaishali Patel, Chelsea Richwine, and Catherine Strawley. "The Evolution of Health Information Technology for Enhanced Patient-Centric Care in the United States (Preprint)." *Journal of Medical Internet Research* 26 (2024). https://doi.org/10.2196/59791.

Centre for Indonesia's Strategic Development Initiatives. "CISDI Health Outlook 2023: Saatnya Berubah," 2023.

Derecho, Karyl Claire, Rentor Cafino, Sarah Lizette Aquino-Cafino, Armando Isla, Jay Ar Esencia, Nove Joshua Lactuan, Jiddo Andrei G. Maranda, and Lemuel Clark P. Velasco. "Technology Adoption of Electronic Medical Records in Developing Economies: A Systematic Review on Physicians' Perspective." *Digital Health*, 2024. https://doi.org/10.1177/20552076231224605.

Faris, Nagham, Miriam Saliba, Hani Tamim, Rima Jabbour, Ahmad Fakih, Zouhair Sadek, Rula Antoun, Mazen El Sayed, and Eveline Hitti. "Electronic Medical Record Implementation in the Emergency Department in a Low-Resource Country: Lessons Learned." *PLoS ONE* 19, no. 3 March (2024): 1–13. https://doi.org/10.1371/journal.pone.0298027.

Golo, Zefan Adiputra, Asharul Fahyudi, Arief Azhari Ilyas, and Titi Santika. "Implementation of Electronic Medical Records at Primary Care in Semarang City Region: An Analysis of Individual and Organisational Determinants." *Jurnal Penelitian Pendidikan IPA* 9, no. 11 (2023): 9985–91. https://doi.org/10.29303/jppipa.v9i11.5627.

Hossain, Md Khalid, Juliana Sutanto, Putu Wuri Handayani, Anasthasia Agnes Haryanto, Joy Bhowmik, and Viviane Frings-Hessami. "An Exploratory Study of Electronic Medical Record Implementation and Recordkeeping Culture: The Case of Hospitals in Indonesia." *BMC Health Services Research* 25, no. 1 (2025). https://doi.org/10.1186/s12913-025-12399-0.

Jedwab, Rebecca M., Alison M. Hutchinson, Elizabeth Manias, Rafael A. Calvo, Naomi Dobroff, Nicholas Glozier, and Bernice Redley. "Nurse Motivation, Engagement and Well-Being before an Electronic Medical Record System Implementation: A Mixed Methods Study." *International Journal of Environmental Research and Public Health*. mdpi.com, 2021. https://doi.org/10.3390/ijerph18052726.

Jedwab, Rebecca M., Alison M. Hutchinson, Elizabeth Manias, Rafael A. Calvo, Naomi Dobroff, and Bernice Redley. "Change in Nurses' Psychosocial Characteristics Pre- and Post-Electronic Medical Record System Implementation Coinciding with the SARS-CoV-2 Pandemic: Pre- and Post-Cross-Sectional Surveys." *International Journal of Medical Informatics* 163 (2022). https://doi.org/10.1016/j.ijmedinf.2022.104783.

Jimma, Bahiru Legesse, and Daniel Berhanie Enyew. "Barriers to the Acceptance of Electronic Medical Records from the Perspective of Physicians and Nurses:A Scoping Review." *Informatics in Medicine Unlocked* 31, no. May (2022): 100991. https://doi.org/10.1016/j.imu.2022.100991.

Morquin, D. "Legitimate Resistance without Technophobia: Analysis of Electronic Medical Records Impacts on the Medical Profession." *Revue de Medecine Interne*, 2020. https://doi.org/10.1016/j.revmed.2020.03.011.

Neng Sari Rubiyanti. "Penerapan Rekam Medis Elektronik Di Rumah Sakit Di Indonesia: Kajian Yuridis." *ALADALAH: Jurnal Politik, Sosial, Hukum Dan Humaniora* 1, no. 1 (2023): 179–87. https://doi.org/10.59246/aladalah.v1i1.163.

Ngugi, Philomena N., Martin C. Were, and Ankica Babic. "Users' Perception on Factors Contributing to Electronic Medical Records Systems Use: A Focus Group Discussion Study in Healthcare Facilities Setting in Kenya." *BMC Medical Informatics and Decision Making*, 2021. https://doi.org/10.1186/s12911-021-01737-x.

Ngusie, Habtamu Setegn, Sisay Yitayih Kassie, Alex Ayenew Chereka, and Ermias Bekele Enyew. "Healthcare Providers' Readiness for Electronic Health Record Adoption: A Cross-Sectional Study during Pre-Implementation Phase." *BMC Health Services Research* 22, no. 1 (2022): 1–12. https://doi.org/10.1186/s12913-022-07688-x.

Nurrahma, Alya Nabila, T A Larasati, Intanri Kurniati, and Bayu Anggileo Pramesona. "Electronic Medical Records in First Level Health Facilities." *Review of Primary Care Practice and Education (Kajian Praktik Dan Pendidikan Layanan Primer)*, 2023, 22–26.

Reis, Teresa, Inês Faria, Helena Serra, and Miguel Xavier. "Barriers and Facilitators to Implementing a Continuing Medical Education Intervention in a Primary Health Care Setting." *BMC Health Services Research* 22, no. 1 (2022): 1–13. https://doi.org/10.1186/s12913-022-08019-w.

Sawalha, Raya, Fayez Ahmad, Hamzeh Al Zabadi, Abdulsalam Khayyat, Samar Thabet Jallad, Tareq Amro, and Rami Zagha. "Factors Influencing Health Information System Acceptance: A Cross-Sectional Study from a Low-Middle-Income Country." *Frontiers in Health Services* 4, no. September (2024): 1–7. https://doi.org/10.3389/frhs.2024.1458096.

Thit, Win Min, Sai Wai Yan Myint Thu, Jaranit Kaewkungwal, Ngamphol Soonthornworasiri, Nawanan Theera-Ampornpunt, Boonchai Kijsanayotin, Saranath Lawpoolsri, Sid Naing, and Wirichada Pan-Ngum. "User Acceptance of Electronic Medical Record System: Implementation at Marie Stopes International, Myanmar." *Healthcare Informatics Research*. synapse.koreamed.org, 2020. https://doi.org/10.4258/hir.2020.26.3.185.

Torab-Miandoab, Amir, Taha Samad-Soltani, Ahmadreza Jodati, and Peyman Rezaei-Hachesu. "Interoperability of Heterogeneous Health Information Systems: A Systematic Literature Review." *BMC Medical Informatics and Decision Making* 23, no. 1 (2023): 1–13. https://doi.org/10.1186/s12911-023-02115-5.

Veenstra, Gepke L., Eric F. Rietzschel, Eric Molleman, Erik Heineman, Jan Pols, and Gera A. Welker. "Electronic Health Record Implementation and Healthcare Workers' Work Characteristics and Autonomous Motivation—a before-and-after Study." *BMC Medical Informatics and Decision Making* 22, no. 1 (2022): 1–15. https://doi.org/10.1186/s12911-022-01858-x.

Wati, R, P D Igiany, and J Pertiwi. "Analisis Kesiapan Implementasi Rekam Medis Elektronik Di Puskesmas Baki." *PREPOTIF* ..., 2024. https://journal.universitaspahlawan.ac.id/index.php/prepotif/article/view/26515.

Wubante, Sisay Maru, Masresha Derese Tegegne, Mequannent Sharew Melaku, Nebyu Demeke Mengiste, Ashenafi Fentahun, Wondosen Zemene, Makida Fikadie, et al. "Healthcare Professionals' Knowledge, Attitude and Its Associated Factors toward Electronic Personal Health Record System in a Resource-Limited Setting: A Cross-Sectional Study." *Frontiers in Public Health* 11 (2023). https://doi.org/10.3389/fpubh.2023.1114456.

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