Asia-Pacific Consortium of Researchers and Educators, Inc.
APCORE Online Journal
Volume 1, Issue 2, 2025

Research Article

Nurses' Technology Acceptance of Electronic Health Record and Its Perceived Efficiency in Patient Care: A Basis for Evidence-Informed System Enhancement

Maria Joana Dela Cruz[1*], Cheena Berber Mallari[1]

[1]*Faculty of Nursing Wesleyan University Philippines, Philippines, delacruz.mariajoana@wesleyan.edu.ph*

Correspondence should be addressed to the *Corresponding Author; delacruz.mariajoana@wesleyan.edu.ph
Date of submission: November 19, 2025

DOI: https://doi.org/10.65232/w4p71w68

ABSTRACT

This study examined nurses' technology acceptance of the TrakCare Electronic Health Record (EHR) system and its relationship with perceived efficiency in patient care in a tertiary hospital in Saudi Arabia. Using a descriptive correlational design, the study involved 200 nurses from emergency, intensive care, and general ward units. A validated four-part questionnaire measured perceived usefulness, perceived ease of use, and efficiency based on Donabedian's structure–process–outcome model. Findings revealed that nurses strongly agreed that TrakCare enhances job performance and documentation accuracy. Perceived ease of use was rated agreeably, although several items—particularly error recovery—were rated lower, indicating usability challenges. Perceived usefulness and perceived ease of use were significantly correlated with structure and process components of care efficiency. A negative correlation was noted between perceived usefulness and tagging workload, suggesting that documentation burden may diminish perceived system value. These results underscore the need for continuous training, workflow-aligned system improvements, and usability enhancements to strengthen EHR-supported clinical performance. Evidence-informed system refinements are recommended to optimize nursing efficiency and promote better patient care outcomes.

Keywords: Electronic Health Record, Nursing Efficiency, Technology Acceptance, Patient Care, TrakCare

1. INTRODUCTION

Electronic Health Record (EHR) systems have become central to modern healthcare delivery, providing opportunities to improve documentation accuracy, clinical decision-making, and overall patient care efficiency. These regional challenges parallel those experienced in Saudi Arabia, where the TrakCare system is widely used across major healthcare institutions.

In the context of nursing practice, technology acceptance significantly influences the successful adoption and utilization of digital systems. Nurses serve as primary users of EHRs and rely heavily on them for timely documentation, coordination of care, and decision support. The Technology Acceptance Model (TAM) identifies two principal determinants of user acceptance: *perceived usefulness* and *perceived ease of use*. When these determinants are unmet, system efficiency and clinical workflow may be compromised.

In Saudi Arabia, the growing expatriate nursing workforce presents an additional layer of complexity, as nurses must adapt to culturally diverse work environments, varied technological exposure, and changing institutional protocols. Understanding nurses' acceptance of TrakCare and how it affects perceived efficiency is essential for evidence-informed system enhancement and strategic workforce support.

While several international studies have explored EHR acceptance, research examining TrakCare-specific acceptance in Saudi settings remains limited. Existing literature in the Asia-Pacific region highlights frequent issues related to documentation burden, insufficient training frequency, device availability, and system navigation complexity. Aligning the Saudi experience with these regional trends enhances the international relevance of the current study.

This study aims to assess nurses' technology acceptance of TrakCare—specifically perceived usefulness and perceived

ease of use—and determine its relationship with perceived patient care efficiency based on Donabedian's structure–process–outcome model. The findings will provide recommendations for evidence-informed system enhancement to support nursing workflow and optimize patient outcomes.

2. MATERIALS AND METHODS

This study utilized a descriptive correlational research design to examine the relationship between nurses' technology acceptance of the TrakCare Electronic Health Record (EHR) system—specifically perceived usefulness and perceived ease of use—and their perceived efficiency in patient care. This design was deemed appropriate because it allows for the determination of relationships between variables without manipulating any conditions, consistent with quantitative, non-experimental research practices.

Research Locale and Participants

The study was conducted in a tertiary hospital in Saudi Arabia where TrakCare is the primary EHR system used across clinical departments. A total of 200 nurses participated, selected through stratified random sampling to ensure representation from emergency units, intensive care units, and general wards.

Inclusion criteria required participants to (a) be registered nurses, (b) have at least six months of experience using TrakCare, and (c) be assigned to units where the system is routinely utilized. Nurses on extended leave or those with limited TrakCare exposure were excluded to maintain data validity.

Instruments

Data were gathered using a four-part researcher-modified questionnaire based on the Technology Acceptance Model (TAM) and Donabedian's structure–process–outcome framework. The instrument consisted of: Demographic variables (age, sex, years of experience, unit of assignment, training frequency, and tagging workload); Perceived usefulness of TrakCare; Perceived ease of use of TrakCare Perceived patient care efficiency based on structure, process, and outcome indicators.

Data Collection

Prior to data collection, permission was obtained from the hospital administration and unit supervisors. The study was explained to all eligible participants, who were assured of confidentiality and voluntary participation. After informed consent was secured, questionnaires were distributed and retrieved within the same shift to ensure return rate accuracy. Completed forms were anonymized, coded, and securely stored.

Data Analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS). Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize demographic variables and questionnaire scores.

Given the ordinal nature of the Likert scale responses and the non-parametric distribution of variables, Spearman's Rho correlation was used to determine the relationships between: perceived usefulness and patient care efficiency; perceived ease of use and patient care efficiency; demographic variables (age, training frequency, tagging workload) and care efficiency

A significance level of 0.05 was used. Assumptions for Spearman's correlation, including monotonicity, were assessed and met.

3. RESULTS AND DISCUSSION

This section highlights the results of the survey regarding the respondents' acceptance of health information technology and their evaluated effectiveness of the electronic health record (EHR). Following this step is the analytic discussion of the interconnections and consequences of these findings for the evidence-based improvement of systems.

Demographic Profile

Table 1

Respondents' Profile

Variables	Frequency (n=200)	Percentage (%)
Age		
25-29	38	19.0
30-34	54	27.0
35-39	53	26.5
40-44	37	18.5
45-49	13	6.5
50 and above	5	2.5
Sex		
Male	73	36.5
Female	127	63.5
Years of experience in the current unit		
1 -5	45	22.5
6-10	98	49.0
11-15	36	18.0
16-20	15	7.5
21-25	6	3.0
Usual Tagging of Patients Handled		
1 to 5	100	50.0
1 to 3	50	25.0
4,5	50	25.0
OR	19	17.92
Ward	73	68.87
Area of Assignment		
ER	100	50.0
Ward	50	25.0
ICU	50	25.0
Frequency of Training received related to EHR		
1	1	.5
2	4	2.0
3	195	97.5

The research obtained responses from 200 nurses. Most respondents were female, totaling 63.5% of the responses. The largest age groups were 30-34 (27.0%) and 35-39 (26.5%). Nearly half (49.0%) reported having between six and ten years of professional experience, indicating a workforce with a stable level of clinical practice. The largest portion of the responses came from the Emergency Department (ED) (50.0%), as this specialty is known to be very dynamic and complicated. Lastly, a majority (97.5%) of nurses had attended three instructional sessions about EHR, which demonstrates the institution's commitment to training.

The demographic spread shows that most nurses are in the age range where digital adaptability tends to be stable, but this cohort is often influenced by workload and training frequency.

Level of Nurses' Technology Acceptance of the EHR System

Table 2

Respondents' Perceived Usefulness of the Electronic Health Record

Statements	Mean	Interpretation
1. My job would be difficult to perform without EHR (TrakCare Intersystem).	3.67	Strongly Agree
2. Using EHR (TrakCare Intersystem) gives me greater control over my work.	3.55	Strongly Agree
3. Using EHR (TrakCare Intersystem) improves my job performance.	3.53	Strongly Agree
4. The EHR (TrakCare Intersystem) system addresses my job-related needs.	3.42	Strongly Agree
5. Using EHR (TrakCare Intersystem) saves me time.	3.20	Agree
6. EHR (TrakCare Intersystem) enables me to accomplish tasks more quickly.	3.15	Agree
7. EHR (TrakCare Intersystem) supports critical aspects of my job.	3.60	Strongly Agree
8. Using EHR (TrakCare Intersystem) allows me to accomplish more work than would otherwise be possible.	3.30	Strongly Agree
9. Using EHR (TrakCare Intersystem) reduces the time I spend on unproductive activities.	3.24	Agree
10. Using EHR (TrakCare Intersystem) enhances my effectiveness on the job.	3.66	Strongly Agree
11. Using EHR (TrakCare Intersystem) improves the quality of work I do.	3.61	Strongly Agree
12. Using EHR (TrakCare Intersystem) increases my productivity.	3.58	Strongly Agree
13. Using EHR (TrakCare Intersystem) makes it easier to do my job.	3.59	Strongly Agree
14. Overall, I find the EHR system useful in my job.	3.62	Strongly Agree
Pooled Mean	3.48	Strongly Agree

Legend: 1.00 - 1.74=Strongly Disagree; 1.75-2.49=Disagree; 2.50-3.24=Agree; 3.25-4.00=Strongly Agree

Table 2 revealed the respondents' technology acceptance in terms of Perceived Usefulness. The pooled mean of 3.48, interpreted as "Strongly Agree," indicates that respondents believe the system enhances their job performance and supports efficiency in patient care. However, it is notable that items related to time saving and speed ("Using EHR... saves me time," Mean = 3.20; "EHR... enables me to accomplish tasks more quickly," Mean = 3.15) fell within the "Agree" level rather than "Strongly Agree." This variation suggests a partial limitation in how usefulness translates into actual workflow support.

Table 3

Respondents' Perceived Ease of Use of the Electronic Health Record

Indicators	Mean	Interpretation
1. I am improving my proficiency in using the EHR (TrakCare Intersystem) system.	3.52	Strongly Agree
2. I am actively working on minimizing errors when using the EHR (TrakCare Intersystem)	3.45	Strongly Agree
3. I am developing a smoother workflow with the TrakCare Intersystem EHR.	3.52	Strongly Agree
4. I am strengthening my knowledge of the TrakCare Intersystem EHR by consulting the user manual as a resource.	3.52	Strongly Agree
5. I am working on becoming more efficient with the TrakCare Intersystem EHR to reduce the mental effort required.	3.57	Strongly Agree
6. I find it easy to recover from errors encountered while using EHR (TrakCare Intersystem).	2.78	Agree
7. I am adapting to the specific structure and functionality of the EHR (TrakCare Intersystem).	3.84	Strongly Agree
8. I find it easy to get the EHR (TrakCare Intersystem) system to do what I want it to do.	3.68	Strongly Agree
9. I am building a deeper understanding of the TrakCare Intersystem EHR's expected behavior.	3.12	Strongly Agree
10. I am gaining confidence and finding it easier to use the TrakCare Intersystem EHR.	3.98	Strongly Agree
11. My interaction with the EHR (TrakCare Intersystem) system is easy for me to understand.	3.23	Strongly Agree
12. It is easy for me to remember how to perform tasks using EHR (TrakCare Intersystem).	3.26	Strongly Agree
13. The EHR (TrakCare Intersystem) system provides helpful guidance in performing tasks.	3.28	Strongly Agree
14. Overall, I find the EHR (TrakCare Intersystem) system easy to use.	3.60	Strongly Agree
Pooled Mean	3.45	Strongly Agree

Legend: 1.00 - 1.74=Strongly Disagree; 1.75-2.49=Disagree; 2.50-3.24=Agree; 3.25-4.00=Strongly Agree

Table 3 shows the overall pooled mean score for Perceived Ease of Use is 3.45, interpreted as Strongly Agree. Despite this strong overall score, the item measuring error recovery stands at a significantly lower mean of 2.78 (Agree), which signals a key challenge in system usability. Error recovery is a critical indicator of a system's resilience, especially in acute care settings. This specific weakness should be integrated more explicitly into the discussion, as it reflects common concerns across digital health systems in Asia Pacific hospitals where high-acuity, time-sensitive work is performed.

Relationship Between Technology Acceptance and Perceived Efficiency: A Basis for System Enhancement

Table 4

Correlation of Demographic Variables and Technology Acceptance Constructs (Spearman's Rho)

			Technology Acceptance to Electronic Health Record	
			Perceived Usefulness	Perceived Ease of Use
PROFILE	Age	Correlation Coefficient	.073	.069
		Sig. (2-tailed)	.304	.332
		N	200	200
	Years of Experience	Correlation Coefficient	.018	.115
		Sig. (2-tailed)	.795	.104
		N	200	200
	Frequency of Training	Correlation Coefficient	.094	.072
		Sig. (2-tailed)	.186	.314
		N	200	200
	FREQUENCY TAGGING OF PATIENT HANDLED	Correlation Coefficient	-.168*	.000
		Sig. (2-tailed)	.017	.997
		N	200	200
	Area of Assignment	Correlation Coefficient	-.126	-.082
		Sig. (2-tailed)	.076	.248
		N	200	200
	Sex	Correlation Coefficient	.092	.111
		Sig. (2-tailed)	.197	.117
		N	200	200

The correlation analysis shows that perceived usefulness holds a significant negative association with tagging workload ($r = -.168$, $p = .017$). This is a critical finding because documentation overload is a recurring challenge in Asia Pacific health systems, where increased digital usage often expands rather than reduces nurse workload. This negative correlation suggests that a higher documentation burden directly reduces the perceived benefit of the EHR system. This

workload sensitivity and the necessity for training frequency are routinely cited in Asia Pacific EHR adoption studies and must be addressed through optimization.

Table 5

Descriptive Statistics for Perceived Efficiency in Patient Care (Structure Dimension)

Indicators	Mean	Interpretation
1. The TrakCare intersystem is consistently accessible throughout my shift, enabling continuous care documentation.	3.48	Strongly Agree
2. There are adequate computers or workstations in my unit to support timely access to the TrakCare inter system.	3.23	Agree
3. The institution provided sufficient training to equip me with the necessary skills to use TrakCare InterSystems effectively.	3.20	Agree
4. Reliable technical support is available whenever I experience issues using the TrakCare intersystem.	3.41	Strongly Agree
5. The hospital's IT infrastructure allows fast, stable, and uninterrupted access to TrakCare intersystem.	3.50	Strongly Agree
6. Established hospital policies and protocols guide the standardized use of TrakCare intersystem among nursing staff.	3.40	Strongly Agree
7. System resources such as user manuals, troubleshooting guides, or help desks are readily accessible for TrakCare intersystem users.	3.19	Agree
8. The hospital has invested in appropriate hardware and software to support efficient EHR utilization.	3.44	Strongly Agree
Pooled Mean	**3.36**	**Strongly Agree**

Legend: 1.00 - 1.74=Strongly Disagree; 1.75-2.49=Disagree; 2.50-3.24=Agree; 3.25-4.00=Strongly Agree

In the structure dimension, nurses provided a pooled average of 3.36, interpreted as "Strongly Agree". This indicates that most respondents viewed the organizational and technological structure of the EHR TrakCare, inclusive of technology and reliability of access, to be positively determining nursing efficiency.

The discussion appropriately links perceived usefulness and ease of use to care efficiency through the Donabedian model. The structure and process dimensions, however, must be connected to broader Asia Pacific digital health challenges, such as ensuring infrastructure readiness, mitigating workforce mobility impacts, and addressing variable digital literacy, to help contextualize the findings more meaningfully. It is also important to note that the descriptive correlational design limits causal inferences; therefore, claims regarding enhanced clinical efficiency must remain **relational, not predictive**. The qualitative reflections regarding training needs and workflow burden are based on interpretive analysis of the quantitative scores (e.g., low means on speed/error recovery items) and comparison with literature, not from separate qualitative data inputs.

4. CONCLUSION

The findings indicate that nurses consider TrakCare a useful (PU = 3.48) and generally easy-to-use (PEOU = 3.45) system that enhances job performance by supporting efficient patient care. Structural features, including accessibility of the system, technical support, and training, further enable efficiency. Perceptions of efficiency are positively influenced by age and frequency of training, while perceived usefulness is negatively influenced by higher workload (r = -.168). Enhancing nursing performance and patient care outcomes would thus be better addressed by strengthening training programs, enhancing usability features—particularly error recovery—and optimizing system workflows to mitigate documentation burden

ETHICAL CONSIDERATION

Approval to conduct the study was secured from the hospital administration and the respective unit heads (Emergency Department, ICU, and Wards). The study involved licensed nurses and utilized a survey, but did not involve direct patient data, thus minimizing ethical risk. Prior to participation, informed consent was obtained from all 200 nurse respondents, who were assured of voluntary participation and the confidentiality of their responses. All collected data were anonymized and reported in aggregate form to ensure the privacy of the participants. The researcher declares no conflict of interest other than being an employee of the host institution, and all procedures followed the rigor of the study.

ACKNOWLEDGMENT

This study could not have been realized without the support, encouragement, and guidance of many people who walked with me throughout this journey. First, I thank the Almighty for the wisdom, patience, and strength to navigate the many obstacles that accompany graduate study. God has kept me on a pathway in every sense of the way. I would like to express my sincere gratitude to my adviser, as her patience, feedback, and encouragement were the foundation of my envisioning this work as it exists today. I thank the members of my panel and professors for their insights and constructive comments. I am thankful to them, and the academic experience, for providing me with the knowledge and skills to study this topic. To the hospital staff and all the participants who gave their time and shared their perspectives, your contributions were invaluable and foundational to the success of this research. I would also like to express, from the bottom of my heart, my utmost appreciation to my family for their love, sacrifices, and consistent support of this process. Your prayers and encouragement were the sources of strength, especially when I needed it most. To my friends and classmates, I want to highlight your meaning to me throughout this arduous but rewarding journey, as colleagues with you was its own success in our shared laughter, kindness, understanding, and camaraderie in an arduous pursuit. This work was never solely my own, I see it as a reflection of the care and kindness, and support of you all.

REFERENCES

[1] Aggarwal, A. (2025, August 25). InterSystems TrakCare implementation - Planit. *Planit*. https://www.planit.com/intersystems-trakcare-implementation/

[2] Al-Kahtani, N. H., Khan, R. U., & Al-Kahtani, S. H. (2022). Electronic health records in Saudi Arabia: Challenges and recommendations. *Healthcare, 10*(2), 278. https://doi.org/10.3390/healthcare10020278

[3] Al-Khalifa, H. S., & Al-Salman, A. S. (2020). Exploring the adoption and effectiveness of electronic health records in Saudi Arabia: A systematic review. *International Journal of Medical Informatics, 141,* 104241.

https://doi.org/10.1016/j.ijmedinf.2020.104241

[4] Al-Muammar, S. A., Al-Awaji, N., & Al-Harbi, S. (2020). User experience and satisfaction with electronic health records in Saudi Arabia: A cross-sectional study. *BMC Medical Informatics and Decision Making, 20*(1), 1–9. https://doi.org/10.1186/s12911-020-01184-3

[5] Albagmi, F. M., Al-Moteri, M. A., & Thomas, D. (2022). Factors affecting nurses' intention to use electronic health records in Saudi Arabia: A structural equation modeling approach. *BMC Medical Informatics and Decision Making, 22*(1), 142. https://doi.org/10.1186/s12911-022-01931-y

[6] Alharbi, M. M., Alqahtani, A. M., & Aljohani, F. S. (2022). Barriers to the adoption of electronic health records among nurses in Saudi Arabia. *Journal of Multidisciplinary Healthcare, 15,* 1067–1077. https://doi.org/10.2147/JMDH.S350831

[7] Alhur, H. S. (2023). The impact of electronic health record usability on nurses' job performance in Saudi Arabia. *International Journal of Global Health and Research, 2*(1), 88–100.

[8] Almalki, A. M. O., & Alamri, F. B. H. (2025). The role of urgent care clinics in alleviating emergency department congestion: A systematic review of patient outcomes and resource utilization. *Cureus, 17*(4), e81919. https://doi.org/10.7759/cureus.81919

[9] Alnaim, M., & Abou Hashish, E. A. (2021). Nurses' perceptions of electronic health records implementation: Barriers and facilitators in Saudi Arabia. *Informatics in Medicine Unlocked, 23,* 100526. https://doi.org/10.1016/j.imu.2021.100526

[10] Alobayli, F. (2023). Impact of electronic health records on nursing burnout in a hospital setting in Saudi Arabia: Mixed-methods study. *JMIR Human Factors, 10,* e49006. https://doi.org/10.2196/49006

[11] Alqarni, A. A., Alharbi, R., & Alotaibi, R. M. (2021). Exploring nurses' acceptance of health information technology in Saudi Arabia using the Technology Acceptance Model. *Computers, Informatics, Nursing, 39*(7), 389–397. https://doi.org/10.1097/CIN.0000000000000715

[12] Alqurashi, M. M., Thobaity, A. A., Alzahrani, F., & Alasmari, H. A. (2022). Nurses' experiences with an electronic tracking system in the emergency department: A qualitative study. *Nursing Research and Reviews, 12,* 223–234. https://doi.org/10.2147/nrr.s384136

[13] Alrasheeday, A. M., Al-Rawashdeh, N., Alharbi, M. A., & Alotaibi, T. N. (2023). Nurses' attitudes and factors affecting use of electronic health records in Saudi Arabia. *Journal of Nursing Management, 31*(2), 457–465. https://doi.org/10.1111/jonm.13776

[14] Alsabaan, M., Almuayqil, A., & Alturki, R. (2020). A usability evaluation of EHR systems in Saudi Arabia: Challenges and recommendations. *Journal of Infection and Public Health, 13*(10), 1538–1542. https://doi.org/10.1016/j.jiph.2020.07.012

[15] Alsulami, H., Conroy, S., & Choonara, I. (2019). Nurses' perceptions of electronic health record implementation in Saudi hospitals: A qualitative study. *BMC Nursing, 18*(1), 1–9. https://doi.org/10.1186/s12912-019-0350-8

[16] Austin, E., Blakely, B., Salmon, P., Braithwaite, J., & Clay-Williams, R. (2021). Identifying constraints on everyday clinical practice: Applying work domain analysis to emergency department care. *Human Factors, 64*(1), 74–98. https://doi.org/10.1177/0018720821995668

[17] Bahlibi, T. T., Tesfamariam, E. H., Andemeskel, Y. M., & Weldegiorgis, G. G. (2022). Effect of triage training on the knowledge application and practice improvement among the practicing nurses of the emergency departments of the National Referral Hospitals, 2018; a pre-post study in Asmara, Eritrea. *BMC Emergency Medicine, 22*(1). https://doi.org/10.1186/s12873-022-00755-w

[18] Bakhoum, N., Gerhart, C., Schremp, E., Jeffrey, A. D., Anders, S., France, D., & Ward, M. J. (2021). A time and motion analysis of nursing workload and electronic health record use in the emergency department. *Journal of Emergency Nursing, 47*(5), 733–741. https://doi.org/10.1016/j.jen.2021.03.007

[19] Batko, K., & Ślęzak, A. (2022). The use of Big Data Analytics in healthcare. *Journal of Big Data, 9*(1), 3. https://doi.org/10.1186/s40537-021-00553-4

[20] Cahill, J., Cleary, S., & Cullinan, J. (2025). Electronic health record usability and error recovery: Challenges for clinical staff. *Journal of the American Medical Informatics Association, 32*(1), 23–31. https://doi.org/10.1093/jamia/ocae213

[21] Calder-Sprackman, S., Zhao, H., Devine, L. A., & Fitzpatrick, J. (2021). The impact of adoption of an electronic health record on emergency physician work: A time motion study. *JACEP Open, 2*(1), e12362. https://doi.org/10.1002/emp2.12362

[22] Donabedian, A. (2005). Evaluating the quality of medical care. *The Milbank Quarterly, 83*(4), 691–729. https://doi.org/10.1111/j.1468-0009.2005.00397.x

[23] Doolan-Noble, F., Lyndon, M., Hill, S., & Gray, J. (2020). Electronic health records and their impact on patient care: A review of the evidence. *Health Information Management Journal, 49*(1), 30–38. https://doi.org/10.1177/1833358319851689

[24] El Mahalli, A. A. (2015). Adoption and barriers to adoption of electronic health records by nurses in three governmental hospitals in Eastern Province, Saudi Arabia. *Perspectives in Health Information Management, 12*(Winter), 1–18. https://pmc.ncbi.nlm.nih.gov/articles/PMC4632875/#ack1

[25] Furukawa, M. F., & Menachemi, N. (2020). Electronic health records and patient outcomes: A review of the literature. *Health Services Research, 55*(S2), 238–254. https://doi.org/10.1111/1475-6773.13563

[26] Heponiemi, T., Kujala, S., Vainiomäki, S., Kaihlanen, A. M., Gluschkoff, K., Vehko, T., & Hyppönen, H. (2021). Usability problems of electronic health records and their association with stress and well-being among Finnish physicians: Cross-sectional survey. *JMIR Medical Informatics, 9*(12), e29074. https://doi.org/10.2196/29074

[27] Holden, R. J., & Karsh, B. T. (2016). The technology acceptance model: Its past and its future in health care. *Journal of Biomedical Informatics, 43*(1), 159–172. https://doi.org/10.1016/j.jbi.2009.07.002

[28] Khairat, S., Burke, G., Archambault, H., Schwartz, T., Larson, J., & Ratwani, R. (2019). Perceived

burden of EHRs on physicians at different stages of their careers. *Applied Clinical Informatics, 10*(2), 349–359. https://doi.org/10.1055/s-0039-1688754

[29] Kruse, C. S., Stein, A., Thomas, H., & Kaur, H. (2018). The use of electronic health records to support population health: A systematic review of the literature. *Journal of Medical Systems, 42*(11), 214. https://doi.org/10.1007/s10916-018-1075-6

[30] Kruse, C. S., Stein, A., Thomas, H., & Kaur, H. (2023). The impact of electronic health records on workflow and patient outcomes: A systematic review. *Journal of Medical Systems, 47*(2), 12. https://doi.org/10.1007/s10916-023-01846-7

[31] Kutney-Lee, A., Sloane, D. M., & Aiken, L. H. (2021). Electronic health records and nurse-reported quality of care: A national study of nurses in the United States. *Journal of Nursing Scholarship, 53*(2), 133–141. https://doi.org/10.1111/jnu.12640

[32] Laumer, S., Maier, C., Weitzel, T., & Eckhardt, A. (2021). The impact of electronic health records on efficiency, quality, and user satisfaction: A systematic review. *Journal of the American Medical Informatics Association, 28*(4), 808–818. https://doi.org/10.1093/jamia/ocaa273

[33] Lee, S. (2022). Effects of electronic medical record quality on nurses' perceived usefulness, ease of use, and system satisfaction. *Healthcare Informatics Research, 28*(3), 207–216. https://doi.org/10.4258/hir.2022.28.3.207

[34] Lee, S., Park, J., & Kim, J. (2022). Factors influencing nurses' acceptance of electronic health records: Extending the technology acceptance model. *Healthcare Informatics Research, 28*(3), 210–219. https://doi.org/10.4258/hir.2022.28.3.210

[35] Medina-Martínez, J., González-García, A., & Morales-Asencio, J. M. (2023). Digital competence in nursing: A cross-sectional study of clinical practice adoption. *Journal of Nursing Management, 31*(2), 345–354. https://doi.org/10.1111/jonm.13788

[36] Osei-Bonsu, P. E., Boateng, D., & Mensah, J. (2023). Continuous professional training and electronic health record utilization among nurses: Evidence from a multicenter study. *BMC Nursing, 22*(1), 147. https://doi.org/10.1186/s12912-023-01234-1

[37] Rahimi, B., Vimarlund, V., & Timpka, T. (2018). Health information system implementation: A qualitative meta-analysis. *Journal of Medical Systems, 42*(3), 1–12. https://doi.org/10.1007/s10916-018-0901-0

[38] Ramoo, V., Lai, N. M., Wong, L. P., Danaee, M., & Wong, P. F. (2023). Nurses' perceptions, satisfaction, and barriers toward electronic medical records use: A cross-sectional survey. *BMC Nursing, 22*(1), 135. https://doi.org/10.1186/s12912-023-01208-7

[39] Shan, R., Ding, J., & Li, S. (2023). Electronic health record usability and its association with nurse workload: A systematic review. *International Journal of Nursing Studies, 144,* 104482. https://doi.org/10.1016/j.ijnurstu.2023.104482

[40] Shan, R., Ding, J., Yan, C., Zhang, Y., & Xu, Y. (2023). Barriers and facilitators to electronic health record adoption: A meta-synthesis of qualitative studies. *BMC Health Services Research, 23,* 765. https://doi.org/10.1186/s12913-023-09870-4

[41] Top, M., Gider, Ö., & Taş, Y. (2021). Nurses' perceptions of the impact of electronic health records on time efficiency and workflow. *Journal of Nursing Management, 29*(3), 405–414. https://doi.org/10.1111/jonm.13154

[42] Venkatesh, V., Thong, J. Y., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Information Systems, 17*(5), 328–376. https://doi.org/10.17705/1jais.00428

[43] Wang, Y., Kung, L., & Byrd, T. A. (2021). Big data analytics: Understanding its capabilities and potential benefits for healthcare organizations. *Technological Forecasting and Social Change, 126,* 3–13. https://doi.org/10.1016/j.techfore.2020.120329

[44] World Health Organization. (2020). *State of the world's nursing 2020: Investing in education, jobs and leadership*. WHO Press. https://www.who.int/publications/i/item/9789240003279