The Effect of Computer Skills and Training on the Readiness to Use Electronic Medical Records (EMR) among Health Workers: A Meta-Analysis

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Abstract

The implementation of Electronic Medical Records (EMR) is essential for improving healthcare quality and efficiency; however, health workers' readiness to use EMR remains a major challenge. Computer skills and training have been widely identified as key determinants of EMR readiness, yet quantitative evidence integrating their effects is limited. This study aimed to quantitatively assess the effects of computer skills and computer or EMR-specific training on health workers' readiness to use EMR. A meta-analysis of cross-sectional studies was conducted following the PRISMA guidelines. Studies published between 2015 and 2025 were identified from PubMed and Google Scholar. Eligible studies reported adjusted odds ratios (aOR) for the association between computer skills or training and EMR readiness among health workers in Ethiopia and Kenya. Data were synthesized using Review Manager (RevMan) version 5.3. Pooled aORs and 95% confidence intervals (CI) were calculated using a fixed-effect model. Statistical heterogeneity was assessed using the I^2 statistic, and publication bias was evaluated through funnel plot analysis. A total of 11 cross-sectional studies were included in the meta-analysis. Health workers with good computer skills had significantly higher readiness to use EMR compared with those with poor computer skills (aOR = 2.35; 95% CI = 1.89–2.91; $p < 0.001$), with low heterogeneity across studies. Similarly, health workers who received computer or EMR-specific training showed higher readiness to use EMR than those without training (aOR = 2.30; 95% CI = 1.99–2.64; $p < 0.001$), with moderate heterogeneity. Funnel plot assessment indicated no substantial publication bias. Computer skills and training were significantly associated with increased readiness to use EMR among health workers. These findings highlight the importance of integrating digital literacy and structured training programs into health system strengthening efforts to support successful EMR implementation.

Keywords: electronic medical record; computer skills; computer training; health workers

Introduction

The adoption of digital health technology, particularly Electronic Medical Records (EMR), is widely recognized as a foundational element for enhancing the quality, safety, and efficiency of modern healthcare systems (Fatehi et al., 2020). By facilitating accurate clinical documentation, improving information sharing, and supporting evidence-based decision-making, EMR systems have the potential to significantly improve patient outcomes (Kruse & Beane, 2018). However, the ultimate success of any EMR implementation hinges critically on the readiness of its end-users healthcare workers. In practice, human factors such as user acceptance and competency often pose greater barriers to success than technical

limitations (Alami et al., 2017), directly impacting core clinical workflows and professional relationships (Alkureishi et al., 2016).

This challenge is especially pronounced in resource-limited settings, such as Ethiopia, where infrastructural constraints and human capacity gaps can further complicate the digital transition. Existing empirical research has identified a range of human-factor determinants of EMR readiness, with computer literacy and structured training consistently emerging as pivotal factors (Awol et al., 2020). These elements are theorized to enhance users' perceived ease of use and perceived usefulness of the technology, thereby fostering the behavioral intention to adopt it (G. Yehualashet et al., 2015) (Hailegebreal et al., 2023).

Despite these valuable insights, the available evidence remains fragmented and heterogeneous, characterized by variations in study methodologies, populations, and reported outcomes. While systematic reviews on EMR adoption factors exist (Kruse & Beane, 2018), there is a notable gap in the quantitative synthesis of *adjusted* effect estimates which control for confounding variables, specifically for these key human factors. A meta-analysis of such adjusted effects is necessary to move beyond qualitative narrative and provide a more robust, precise measure of the true magnitude of influence that computer skills and training have on readiness. To address this gap, this study aimed to systematically synthesize existing evidence with the following specific objectives:

1. To determine the pooled effect size of healthcare workers' computer skills on their readiness to use EMR.
2. To determine the pooled effect size of EMR-specific training on healthcare workers' readiness to use EMR.

It is expected that the findings from this meta-analysis will provide a strong, quantitative evidence base to inform policymakers and healthcare managers in designing targeted interventions, such as foundational digital literacy programs and structured training curricula, to improve the success of EMR implementation.

Methods

Study Design

This study used a systematic review and meta-analysis design and was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The meta-analysis synthesized evidence from cross-sectional studies that examined factors associated with readiness to use electronic medical records (EMR) among health workers. The literature search covered publications from 2015 to 2025.

Steps of Meta-Analysis

The meta-analysis was conducted through a systematic, multistep process. First, research questions were formulated using the PICO framework, which defined the population, intervention, comparison, and outcome of interest. Next, primary studies were identified through comprehensive searches of electronic databases. The retrieved articles were then screened for relevance, and eligible studies underwent critical appraisal to assess their methodological quality. Afterward, relevant data were extracted from each included study, and adjusted effect estimates were entered into Review Manager (RevMan) version 5.3. The results were synthesized as pooled adjusted odds ratios with corresponding 95% confidence intervals, and statistical heterogeneity was assessed using the I^2 statistic. Finally, the pooled findings were interpreted and conclusions were drawn based on the overall results.

Population and Sample

The study population consisted of health workers included in primary studies that assessed readiness to use EMR.

The sample of this meta-analysis comprised eligible primary studies selected based on predefined inclusion and exclusion criteria. No direct sampling of participants was conducted, as the unit of analysis was published research articles rather than individual respondents.

Data Sources and Data Collection

Primary studies were identified through electronic database searches, including PubMed and Google Scholar. The search strategy combined keywords and Boolean operators as follows: ("Readiness" OR "Utilization") AND ("electronic medical record" OR EMR OR "electronic health record" OR EHR) AND ("health worker" OR "health professionals") AND ("computer skill" OR "literacy" OR "training") AND ("cross sectional" OR "aOR" OR "adjusted odds ratio").

All retrieved articles were screened in several stages. First, titles and abstracts were reviewed to remove duplicates and irrelevant studies. Second, full-text articles were assessed for eligibility based on the inclusion and exclusion criteria. The screening and selection process was documented using a PRISMA flow diagram.

Inclusion and Exclusion Criteria

The inclusion criteria were full-text cross-sectional studies published in English between 2015 and 2025, involving health workers as study subjects, reporting multivariable analysis with adjusted odds ratios (aOR), examining computer skills or computer/EMR-related training as exposures, and readiness to use EMR as the outcome.

Studies were excluded if they were published before 2015, written in languages other than English, or had incomplete outcome or effect size data.

Operational Definitions

Electronic medical records (EMR): a digital-based medical recording system used to record, store, and manage patient health information electronically in a healthcare facility.

Computer skill: the ability of a health worker to operate computer hardware and software.

Computer training: participation in a formal or non-formal training program designed to improve competency in general computer use or specific EMR software.

Quality Assessment

The methodological quality of the included studies was assessed using the Critical Appraisal Skills Programme (CASP) checklist for cross-sectional studies. Each study was evaluated for clarity of objectives, appropriateness of methodology, measurement validity, and control of confounding factors.

Data Analysis

Data were extracted from eligible studies using a standardized extraction form, including author, year of publication, study setting, sample size, exposure variables, and adjusted odds ratios with 95% confidence intervals. Effect estimates from individual studies were entered into Review Manager software (RevMan version 5.3).

Pooled adjusted odds ratios and 95% confidence intervals were calculated using a fixed-effect model. Statistical heterogeneity was assessed using the I^2 statistic and corresponding p-values. Publication bias was evaluated visually using funnel plots.

Results

The meta-analysis process began with defining the research question. The question in this study was whether

computer skills and training influence readiness to use an EMR. The PICO formulation was intended to be used as a reference in searching for relevant articles. The article search was conducted comprehensively through several online databases such as Google Scholar and PubMed.

The article selection process is shown by the prism flow chart which can be seen in Figure 1. The initial search yielded 11 studies that met the inclusion criteria. All studies were conducted in Ethiopia and Kenya and published between 2015 and 2025. The total sample size across studies was 2,809 health workers for the computer skills analysis and 3,161 for the training analysis.

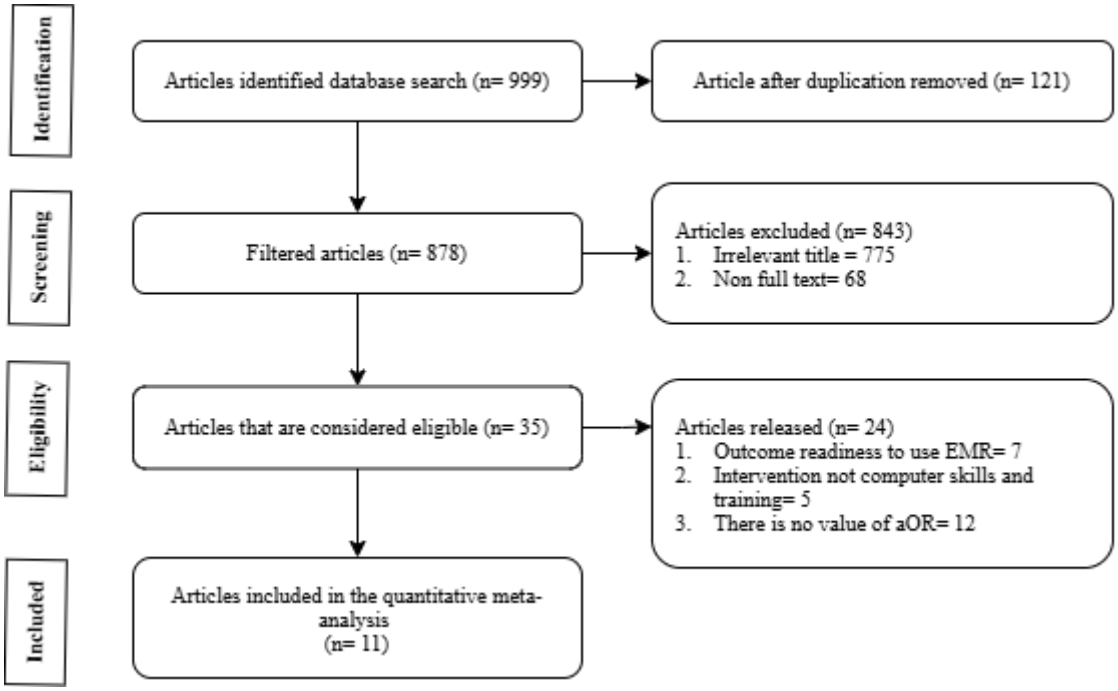

Figure 1. PRISMA Flow Diagram

Table 1. Critical appraisal of cross-sectional studies of the influence of computer skills and training on the readiness to use EMR

Primary Study	Criteria													Total
	1a	1b	1c	1d	2a	2b	3a	3b	4	5	6a	6b	7	
Akeyo *et al*., 2025	2	2	2	2	1	2	1	1	2	2	2	2	2	23
Awol *et al*., 2020	2	2	2	2	1	2	2	2	2	2	2	2	2	25
Gelchu *et al*., 2025	2	2	2	2	1	2	1	1	2	2	2	2	2	23
Hailegebreal *et al*., 2023	2	2	2	2	2	2	1	1	2	2	2	2	2	24
Mekonin *et al*., 2023	2	2	2	2	1	2	2	2	2	2	2	2	2	25
Mulugeta *et al*., 2024	2	2	2	2	2	2	1	1	2	2	2	2	2	24
Oumer *et al*., 2021	2	2	2	1	2	2	2	2	2	2	2	2	2	25
Tesfa *et al*., 2021	2	2	2	2	2	2	1	1	2	2	2	2	2	24
Tolera *et al*., 2022	2	2	2	2	2	2	1	1	2	2	2	2	2	24
Yehualashet *et al*., 2015	2	2	2	2	1	2	2	2	2	2	2	2	2	25
Yilma *et al*., 2023	2	2	2	2	2	2	2	2	2	2	2	2	2	26

Description: 2= Yes; 1= Uncertain; 0= No

Question criteria descriptions:

The quality appraisal of the primary studies was guided by several key criteria. First, the formulation of research

questions was assessed using the PICO framework to determine whether the population examined in each primary study was consistent with the population defined in the meta-analysis. This assessment also examined whether the operational definition of the intervention or exposure in the primary study matched the definition intended in the meta-analysis, whether the comparison or unexposed group was defined consistently, and whether the outcome variables measured in the primary study corresponded to the outcome defined for the meta-analysis.

Second, the methods used to select research subjects were evaluated. In analytical cross-sectional studies, this included assessing whether samples were selected randomly from the target population. When random sampling was not applied, the appraisal considered whether participants were selected based on outcome status or exposure status, and whether such selection methods were appropriate for the study design.

Third, the methods for measuring exposure and outcome variables were reviewed. This involved examining whether similar measurement instruments were used across the primary studies and, when variables were measured on a categorical scale, whether comparable cutoffs or category definitions were applied. Consistency in measurement was considered important for ensuring comparability across studies.

Fourth, potential design-related bias was assessed. For studies in which samples were not selected randomly, attention was given to whether investigators had taken steps to minimize selection bias. This included evaluating whether the selection of participants based on outcome status was independent of exposure status, or whether selection based on exposure status was independent of outcome status.

Fifth, the appraisal examined how primary studies controlled for confounding factors. This involved determining whether investigators conducted multivariate analyses or other appropriate statistical techniques to account for the influence of potential confounders on the association between exposure and outcome.

Sixth, the statistical analysis methods used in each primary study were assessed. This included verifying whether multivariate analytical models, such as multiple logistic regression or multiple linear regression, were applied and whether effect estimates derived from these analyses, such as adjusted odds ratios or adjusted regression coefficients, were reported.

Finally, the possibility of conflicts of interest was considered by reviewing whether the primary studies disclosed funding sources or sponsorship that could have influenced the interpretation or reporting of results. Studies with no apparent conflict of interest were considered to have a lower risk of bias in their conclusions.

The Effect of Computer Skills on EMR Readiness

Table 2 presents description of 7 primary articles with cross-sectional included in the meta-analysis of the influence of computer skills on readiness to use EMR among health workers with a total sample of 2,809.

Table 2. Description of primary studies on the effect of computer skills in readiness to use EMR

Author	Country	Sample	P	I	C	O
Awol *et al*., 2020	Ethiopia	414	Health professionals	Good skill	Poor skill	EMR readiness
Gelchu *et al*., 2025	Ethiopia	384	Health professionals	Good skill	Poor skill	EMR readiness

Author	Country	Sample	P	I	C	O
Hailegebreal *et al*., 2023	Ethiopia	416	Health professionals	Good skill	Poor skill	EMR readiness
Mulugeta *et al*., 2024	Ethiopia	382	Health professionals	Good skill	Poor skill	EMR Implementation
Tesfa *et al*., 2021	Ethiopia	383	Health professionals	Good skill	Poor skill	EMR readiness
Tolera *et al*., 2022	Ethiopia	402	Healthcare professionals	Good skill	Poor skill	The use of EMR
Yehualashet *et al*., 2015	Ethiopia	428	Health professionals	Good Skill	Poor skill	The use of EMR

Table 3. Adjusted Odds Ratio (aOR) of the effect of computer skills on the readiness to use EMR among health workers

Author (Year)	aOR	CI 95%	
		Lower Limit	Upper Limit
Awol *et al*., 2020	3.30	1.05	5.31
Gelchu *et al*., 2025	2.49	1.41	4.39
Hailegebreal *et al*., 2023	3.06	1.49	6.29
Mulugeta *et al*., 2024	2.66	1.16	6.09
Tesfa *et al*., 2021	3.12	1.68	5.76
Tolera *et al*., 2022	1.32	0.68	2.56
Yehualashet *et al*., 2015	1.74	1.16	2.85

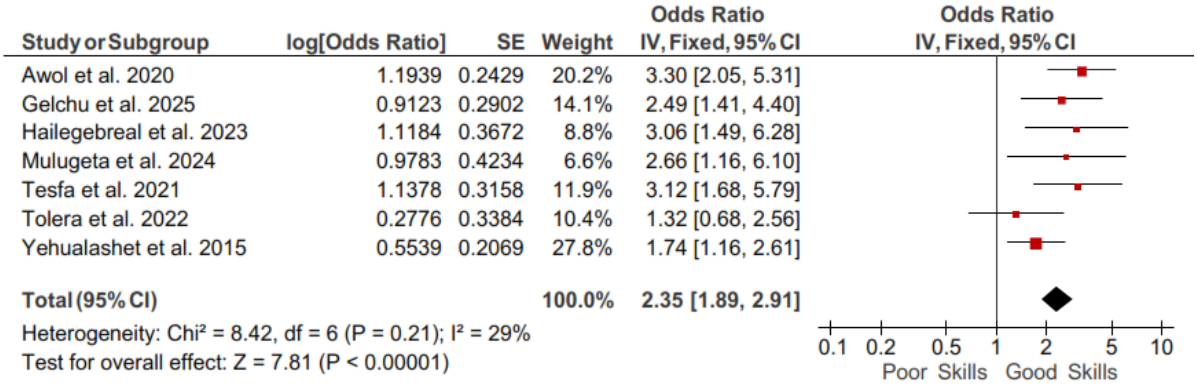

Figure 2. Forest plot of the effect of computer skills on the readiness to use EMR

The forest plot in Figure 2 presented seven studies that reported the association between computer skills and readiness to use EMR. The pooled analysis showed an adjusted odds ratio of 2.35 (95% CI = 1.89 to 2.91; $p < 0.001$). Statistical heterogeneity among the included studies was low ($I^2 = 29\%$, $p = 0.21$).

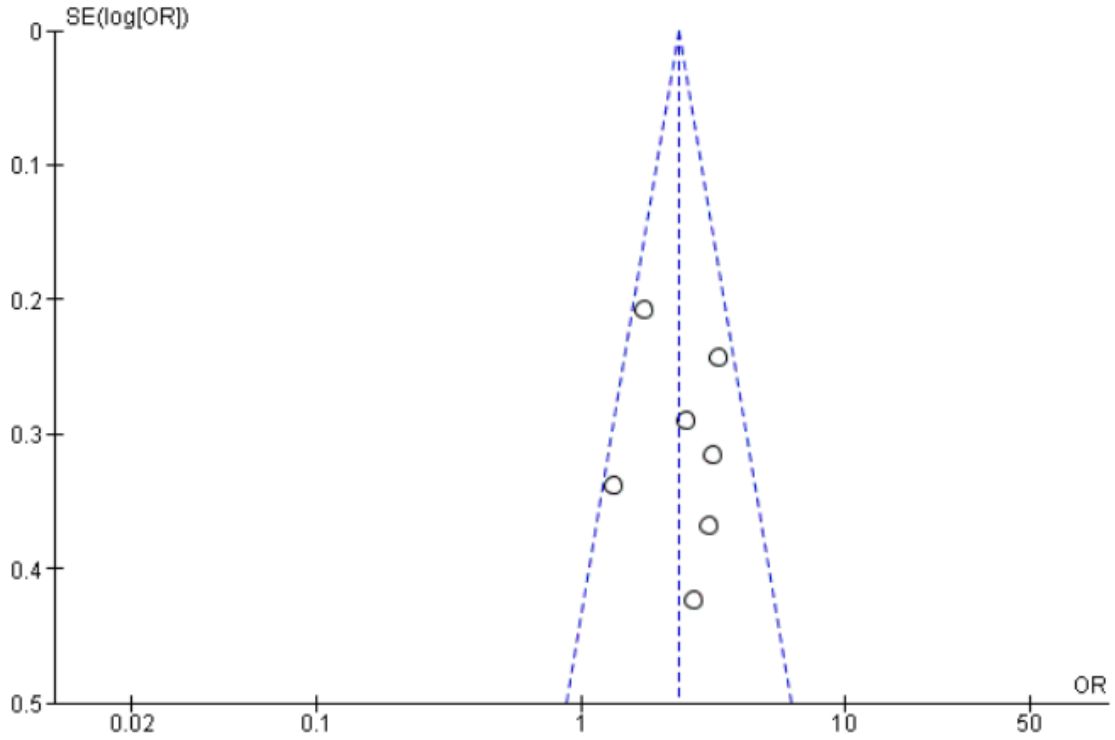

Figure 3. Funnel plot of the effect of computer skills on the readiness to use EMR

The funnel plot in Figure 3 showed a symmetrical distribution of studies on both sides of the pooled effect size. The distribution of studies followed an inverted funnel pattern across different levels of precision.

The Effect of Training on EMR Readiness

Table 4 presents description of 8 primary articles with cross-sectional included in the meta-analysis of the influence of computer or EMR-specific training on readiness to use EMR among health workers with a total sample of 3,181.

Table 4. Description of primary studies on the effect of computer skills in readiness to use EMR

Author	Country	Sample	P	I	C	O
Akeyo *et al*., 2025	Kenya	220	Health workers	Training	No training	EHR sustainability
Awol *et al*., 2020	Ethiopia	414	Health professionals	Training	No training	EMR readiness
Hailegebreal *et al*., 2023	Ethiopia	416	Health professionals	Training	No training	EMR readiness
Mekonin *et al*., 2023	Ethiopia	498	Health professionals	Training	No training	EMR utilization
Mulugeta *et al*., 2024	Ethiopia	382	Health professionals	Training	No training	EMR Implementation
Oumer *et al*., 2021	Ethiopia	412	Health professionals	Training	No training	EMR utilization

Author	Country	Sample	P	I	C	O
Yehualashet *et al*., 2015	Ethiopia	428	Health professionals	Training	No training	The use of EMR
Yilma *et al*., 2023	Ethiopia	411	Health professionals	Training	No training	EMR readiness

Table 5. Adjusted Odds Ratio (aOR) of the effect of computer training on the readiness to use EMR among health workers

Author (Year)	aOR	CI 95%	
		Lower Limit	Upper Limit
Akeyo *et al*., 2025	2.53	1.57	5.12
Awol *et al*., 2020	3.63	1.69	5.80
Hailegebreal *et al*., 2023	2.00	1.06	3.67
Mekonin *et al*., 2023	4.45	2.17	9.10
Mulugeta *et al*., 2024	2.87	1.80	4.56
Oumer *et al*., 2021	5.88	2.93	11.88
Yehualashet *et al*., 2015	1.98	1.65	3.02
Yilma *et al*., 2023	1.59	1.02	2.46

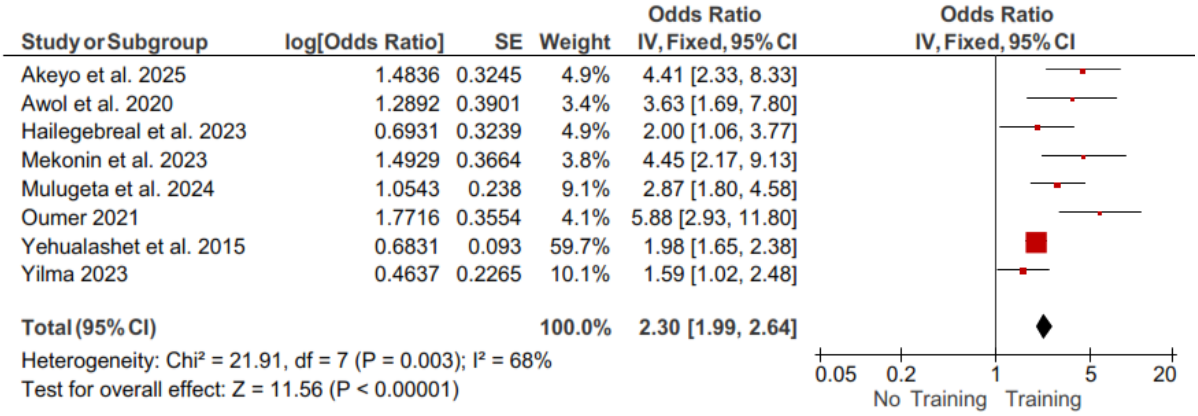

Figure 4. Forest plot of the effect of training on the readiness to use EMR

The forest plot in Figure 4 presented the association between computer or EMR-specific training and readiness to use EMR. The pooled analysis showed an adjusted odds ratio of 2.30 (95% CI = 1.99 to 2.64; $p < 0.001$). Moderate heterogeneity was observed among the included studies ($I^2 = 68\%$, $p = 0.003$).

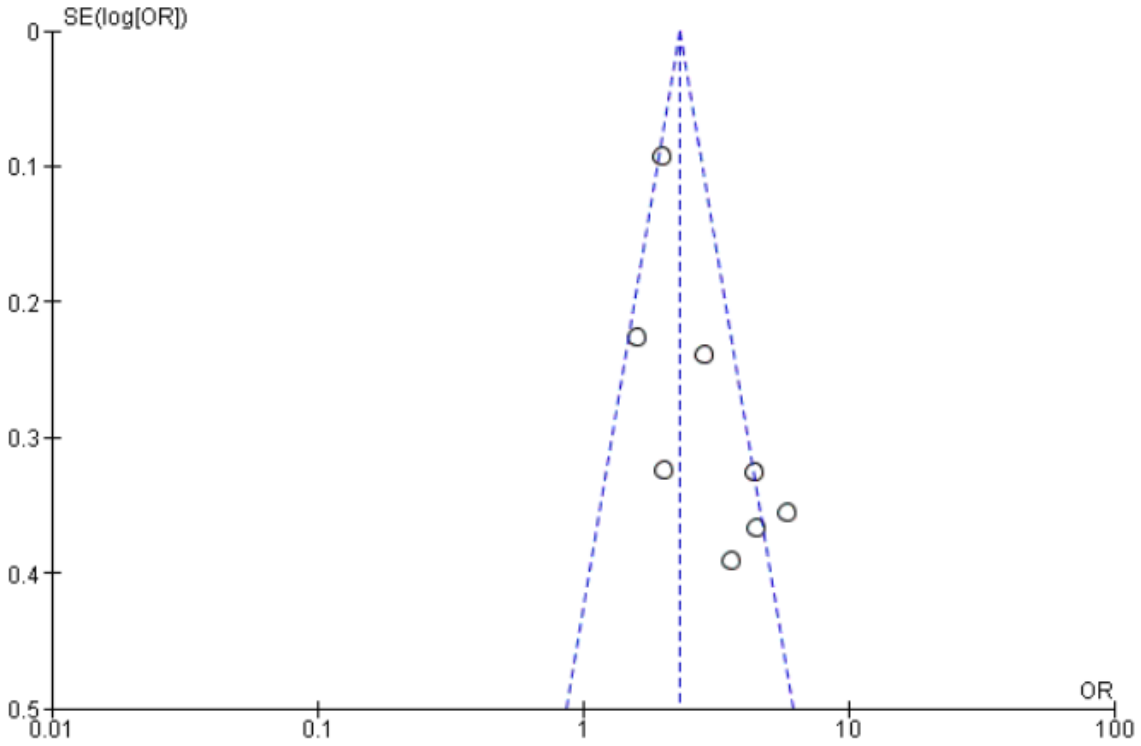

Figure 5. Funnel plot of the effect of training on the readiness to use EMR

The funnel plot in Figure 5 showed a slightly asymmetrical distribution of studies, particularly in the lower precision area, while the overall distribution remained relatively balanced.

Discussion

The Effect of Computer Skills on EMR Readiness

The pooled analysis demonstrated a strong association between computer skills and readiness to use EMR, with health workers who had good computer skills showing higher readiness (aOR = 2.35; 95% CI = 1.89–2.91). The low level of heterogeneity (I^2 = 29%) indicated that this relationship was consistent across the included studies, suggesting that computer skills played a similar role in different healthcare settings.

The symmetrical funnel plot further supported the robustness of this finding, as no clear visual indication of publication bias was observed. The balanced distribution of studies across different levels of precision suggested that the pooled estimate was unlikely to be substantially influenced by selective reporting or small-study effects.

These findings are in line with previous studies conducted in Ethiopia, which consistently reported computer skills as a key determinant of EMR readiness (Tesfa et al., 2021). Similar evidence was also reported by Hailegebreal et al., (2023) who found that computer-literate health workers experienced lower anxiety and greater confidence when using EMR systems. Evidence from other countries, including Myanmar (Oo et al., 2021), and a systematic review by Yehualashet et al., (2021), also identified computer literacy as a major factor influencing EMR adoption.

From a theoretical perspective, this association can be explained using the Technology Acceptance Model. Health workers with better computer skills are more likely to perceive EMR systems as easy to use and useful, which increases their readiness to engage with the technology. Adequate computer skills may also reduce fear of technology and enhance confidence in managing digital tasks, thereby facilitating smoother integration of EMR into daily clinical practice.

Practically, these results highlight the need for health systems to strengthen basic computer literacy as part of EMR implementation strategies. Improving foundational digital skills among health workers may serve as an effective and sustainable approach to enhancing EMR readiness, particularly in low-resource settings.

The Effect of Training on EMR Readiness

The pooled results indicated that computer or EMR-specific training was significantly associated with readiness to use EMR (aOR = 2.30; 95% CI = 1.99–2.64). Although moderate heterogeneity was observed ($I^2 = 68\%$), the direction of effect was consistent across studies, indicating that training contributed positively to EMR readiness despite variations in study characteristics.

The slight asymmetry observed in the funnel plot suggested some variability in study precision; however, the overall distribution remained relatively balanced, indicating no substantial publication bias. The observed heterogeneity may be attributable to differences in training duration, content, delivery methods, and the availability of post-training support across settings.

These findings are consistent with earlier studies from Ethiopia and Kenya. Gelchu et al., (2025) and Mulugeta et al., (2024) reported that hands-on and practice-oriented training improved health workers' competence and confidence in using EMR systems. Tolera et al., (2022) further showed that training programs incorporating scenario-based learning and continuous technical support resulted in sustained readiness and lower resistance to system adoption. Similar conclusions were drawn in a systematic review by Derecho et al., (2024) and a study by (Samadbeik et al., 2020), both of which emphasized the importance of structured EMR training.

The effect of training on readiness can be explained through social cognitive theory, where training provides mastery experiences that enhance self-efficacy. As health workers gain practical exposure and repeated practice, their confidence and perceived ability to use EMR systems increase, which in turn strengthens their readiness to adopt the technology.

In practice, these findings suggest that EMR implementation should be accompanied by comprehensive and continuous training programs rather than one-time sessions. From a scientific perspective, the results reinforce training as a core determinant of EMR readiness and highlight the need for future research to examine which training components are most effective in different healthcare contexts.

Conclusion

This research shows that computer skills and training are highly effective in increasing health workers' readiness to use Electronic Medical Records. The impact is substantial, health workers with computer skills or training are about twice as likely to be prepared to use digital systems. These findings are consistent across various study locations in East Africa, showing that improving digital literacy is a key success factor for digital transformation in healthcare.

Based on these findings, hospitals and health centers should regularly assess their staff's computer skills and provide appropriate training. This training should be designed based on the specific jobs of health workers to make it more effective. For future research, studies should examine the long-term impact of training on the actual use of electronic medical records.

This study has some limitations. The results may not work the same way in other countries because of different

local situations. Also, all the data came from cross-sectional studies, which cannot directly prove cause and effect. Variations in the quality and methods of training across different study locations may have also influenced the results.

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Author Contribution

Naim Khoirul Ummah conceived the study, conducted the data extraction, analysis, and drafted the manuscript. Bhisma Murti supervised the study, provided methodological guidance, and critically revised the manuscript. All authors approved the final version.

References

Alami, H., Gagnon, M.-P., & Fortin, J.-P. (2017). Digital health and the challenge of health systems transformation. *MHealth*, *3*, 31–31. https://doi.org/10.21037/mhealth.2017.07.02

Alkureishi, M. A., Lee, W. W., Lyons, M., Press, V. G., Imam, S., Nkansah-Amankra, A., Werner, D., & Arora, V. M. (2016). Impact of Electronic Medical Record Use on the Patient–Doctor Relationship and Communication: A Systematic Review. *Journal of General Internal Medicine*, *31*(5), 548–560. https://doi.org/10.1007/s11606-015-3582-1

Awol, S. M., Birhanu, A. Y., Mekonnen, Z. A., Gashu, K. D., Shiferaw, A. M., Endehabtu, B. F., Kalayou, M. H., Guadie, H. A., & Tilahun, B. (2020). Health professionals' readiness and its associated factors to implement electronic medical record system in four selected primary hospitals in Ethiopia. *Advances in Medical Education and Practice*, *11*, 147–154. https://doi.org/10.2147/AMEP.S233368

Derecho, K. C., Cafino, R., Aquino-Cafino, S. L., Isla, A., Esencia, J. A., Lactuan, N. J., Maranda, J. A. G., & Velasco, L. C. P. (2024). Technology adoption of electronic medical records in developing economies: A systematic review on physicians' perspective. In *Digital Health* (Vol. 10). SAGE Publications Inc. https://doi.org/10.1177/20552076231224605

Fatehi, F., Samadbeik, M., & Kazemi, A. (2020). What is digital health? review of definitions. *The European Federation for Medical Informatics (EFMI) and IOS Press*, *275*, 67–71. https://doi.org/10.3233/SHTI200696

Gelchu, M., Chala, G., Tuke, G., Wodessa, G., Ayele, A., Yambo, T., & Fikrie, A. (2025). Health professionals' readiness for and factors influencing electronic medical record systems implementation in Southern Oromia, Ethiopia, 2024: a cross-sectional study. *Frontiers in Digital Health*, *7*. https://doi.org/10.3389/fdgth.2025.1531315

Hailegebreal, S., Dileba, T., Haile, Y., & Abebe, S. (2023). Health professionals' readiness to implement electronic medical record system in Gamo zone public hospitals, southern Ethiopia: an institution based cross-sectional study. *BMC Health Services Research*, *23*(1). https://doi.org/10.1186/s12913-023-09745-5

Kruse, C. S., & Beane, A. (2018). Health information technology continues to show positive effect on medical outcomes: Systematic review. *Journal of Medical Internet Research*, *20*(2). https://doi.org/10.2196/jmir.8793

Mulugeta, B., Ayele, M., & Endwenet, E. (2024). *Health Professionals' Attitudes and Factors Influencing the Implementation of Electronic Medical Records: A Multicenter Cross-sectional Study in Ethiopia, 2023*. https://doi.org/10.21203/rs.3.rs-4000103/v1

Oo, H. M., Htun, Y. M., Win, T. T., Han, Z. M., Zaw, T., & Tun, K. M. (2021). Information and communication technology literacy, knowledge and readiness for electronic medical record system adoption among health professionals in a tertiary hospital, Myanmar: A cross-sectional study. *PLoS ONE*, *16*(7 July). https://doi.org/10.1371/journal.pone.0253691

Samadbeik, M., Fatehi, F., Braunstein, M., Barry, B., Saremian, M., Kalhor, F., & Edirippulige, S. (2020). Education and Training on Electronic Medical Records (EMRs) for health care professionals and students: A Scoping Review. In *International Journal of Medical Informatics* (Vol. 142). Elsevier Ireland Ltd. https://doi.org/10.1016/j.ijmedinf.2020.104238

Tesfa, G. A., Kalayou, M. H., & Zemene, W. (2021). Electronic health-information resource utilization and its associated factors among health professionals in amhara regional state teaching hospitals, ethiopia. *Advances in Medical Education and Practice*, *12*, 195–202. https://doi.org/10.2147/AMEP.S289212

Tolera, A., Oljira, L., Dingeta, T., Abera, A., & Roba, H. S. (2022). Electronic medical record use and associated factors among healthcare professionals at public health facilities in Dire Dawa, eastern Ethiopia: A mixed-method study. *Frontiers in Digital Health*, *4*. https://doi.org/10.3389/fdgth.2022.935945

Yehualashet, D. E., Seboka, B. T., Tesfa, G. A., Demeke, A. D., & Amede, E. S. (2021). Barriers to the adoption of electronic medical record system in ethiopia: A systematic review. *Journal of Multidisciplinary Healthcare*, *14*, 2597–2603. https://doi.org/10.2147/JMDH.S327539

Yehualashet, G., Andualem, M., & Tilahun, B. (2015). The Attitude towards and Use of Electronic Medical Record System by Health Professionals at a Referral Hospital in Northern Ethiopia: Cross-Sectional Study. *J Health Inform Afr*, *3*(1), 19–29. https://doi.org/10.12856/JHIA-2015-v3-i1-124