

Brief Communication

Healthcare workers' readiness and training needs in server and network management for electronic medical record systems

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Key words: electronic health records, computer systems, computer communication networks, information systems, health care reform

Abstract

Background

Sri Lanka's health system is undergoing digital transformation, with the advent of electronic medical records (EMR). Effective server and network management is vital for sustaining EMR systems. A workshop on server and network management was tailor made to meet the training needs of participants with varying skills and readiness levels.

Objective

This study aimed to assess readiness and attitudes towards handling the IT infrastructure that supports EMR systems

Methods

A web-based questionnaire including multiple-choice questions, Likert scales and open-ended responses was used for this operational research activity on server and network management within the capacity building programme of the health information unit in collaboration with ICTA for hospital staff working as focal points for EMR implementation. Data was collected anonymously and analysed using descriptive statistics to identify trends.

Results

Thirty-one healthcare workers from seven districts participated, including healthcare assistants (N=31,32.3%), other staff (22.6%), Development Officers (19.4%), and ICT officers (12.9%). While 96.8% had computer access and internet at work, only 48.4% felt comfortable using computers. In terms of EMR usage, 61.3% had prior experience. Key concerns were technical issues (61.3%) and lack of training (64.5%). Knowledge of server and network management was rated as moderate by 48.4% and 45.2%, respectively. Most (74.2%) requested onsite hands-on training, and 54.8% sought online resources. Overall, 61.3% rated the workshop as highly valuable.

Conclusions

Participants showed willingness to adopt new systems and identified their training needs in technical support for server and network management, highlighting the importance of targeted training to enhance IT system management and support EMR implementation to sustain digital health initiatives.

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Introduction

Sri Lanka's healthcare system is progressing through a transformative phase, integrating digital solutions to improve healthcare delivery. A key component of this transformation is the adoption of electronic medical record (EMR) systems in over a hundred hospitals across the country. These systems facilitate better healthcare management, continuity of care and efficient resource utilisation. However, sustaining EMR systems requires robust server and network management, which poses challenges due to varying levels of IT readiness among healthcare workers. This study explored the readiness and training needs of healthcare staff tasked with managing IT infrastructure critical to EMR systems. By addressing gaps in knowledge and skills, targeted capacity-building programmes can ensure the effective and sustainable use of digital health systems. The primary objectives of this study were to evaluate the current IT competencies of healthcare workers in server and network management, to identify attitudes and concerns regarding the implementation and use of EMR systems, and to determine training preferences and support needs for managing IT infrastructure supporting EMR systems.

Methodology

An operational research survey was conducted during a capacity-building workshop organised by the Health Information Unit in collaboration with the Information and Communication Technology Agency (ICTA). The workshop targeted healthcare workers serving as focal points for EMR implementation. A web-based, anonymised questionnaire was administered to participants. The survey included multiple-choice questions, Likert scale assessments and open-ended queries. Responses were analysed using descriptive statistics to identify trends and insights.

Results

A total of 31 healthcare workers from seven districts (Figure 1) participated in the survey, representing diverse designations, including Healthcare Assistants (32.3%), other staff categories (22.6%), Development Officers (19.4%), and ICT Officers (12.9%).

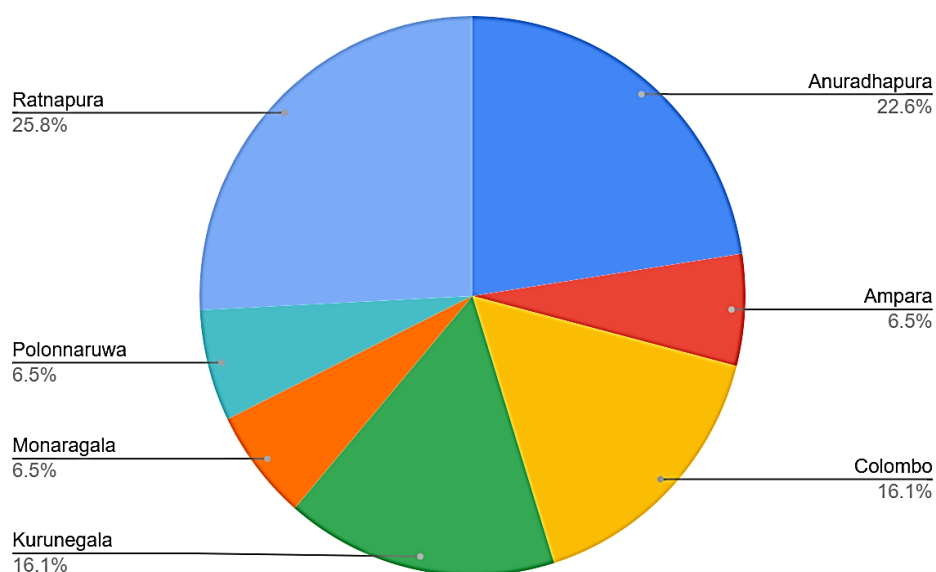


Figure 1: Geographic distribution of the participants

Nearly all participants (96.8%) reported having access to computers and internet connectivity at their workplace, yet only 48.4% felt highly comfortable using computers. Approximately 61.3% of respondents had prior experience with EMR systems such as HHIMS and HIMS. The majority stated that EMR systems are very important in providing healthcare services in hospitals.

Knowledge of IT Infrastructure Management

In terms of IT infrastructure management, 48.4% rated their knowledge of server management as moderate, while 45.2% reported moderate knowledge of network management.

Training Needs and Preferences

The key concerns identified regarding the use of EMR systems (Table 1) included lack of training (64.5%), technical difficulties (61.3%), and data security and privacy issues (32.3%). Training preferences leaned strongly toward hands-on sessions, with 74.2% requesting such opportunities. Additionally, 54.8% of participants expressed interest in online resources, and 51.6% requested access to e-learning platforms. (Table 2)

Table 1: Concerns about using EMR systems

Concern	participants N(%)
Data Security and Privacy	10(32.26%)
Technical Difficulties	19(61.29%)
Lack of Training	20(64.52%)
Change Resistance	8(25.81%)

Table 2: Additional support requested by the participants

Request	participants N(%)
More physical training	23(74.19%)
More online training	17(54.84%)
Access to e-learning platforms/tutorials/manuals	16(51.61%)
On-the-job support	8(25.81%)
Technical assistance	17(54.84%)

Workshop Feedback

Feedback from the workshop was largely positive, with 61.3% of participants rating it as highly valuable and important for their roles. However, they highlighted the need for continued training and more practical application-focused sessions to enhance their server and network management competencies. These findings underscore the

participants' eagerness to improve their skills and adapt to the demands of managing IT systems that support EMR implementation.

Discussion

The findings reveal that while most healthcare workers are familiar with basic computer operations, they lack confidence and proficiency in managing complex IT systems. This gap highlights the critical need for comprehensive and tailored training programmes. Similar challenges have been observed globally. For instance, a study in Kenya reported that healthcare workers frequently faced difficulties in EMR implementation due to limited technical skills and insufficient training, despite having basic computer literacy [1]. Likewise, research in India indicated that while healthcare staff were willing to adopt digital systems, inadequate hands-on training and lack of infrastructure were significant barriers to effective EMR utilisation [2]. These parallels underscore the universality of the issue and the pressing need for strategies tailored to local contexts while drawing on successful global practices.

The high demand for hands-on training among Sri Lankan healthcare workers aligns with similar findings internationally. A study in Ghana emphasised the effectiveness of practical, scenario-based training in improving healthcare workers' competencies in managing IT systems supporting EMRs [3]. Moreover, the preference for online training resources in this study reflects a growing global trend toward leveraging digital platforms for continuous learning. Countries like South Africa have effectively used online modules and blended learning approaches to expand the reach and flexibility of training programmes in resource-constrained settings [4].

The concerns raised by participants, particularly regarding data security and technical difficulties, are consistent with challenges noted in other studies. In a review of EMR adoption in Southeast Asia, fear of data breaches and the complexity of system troubleshooting were significant barriers to staff confidence [5]. Addressing these aspects through targeted training programmes can build healthcare workers' resilience and foster a secure, efficient digital health environment.

Conclusion and Recommendations

Healthcare workers demonstrated a strong willingness to adapt to new digital health systems but emphasised the need for enhanced training and support. To sustain EMR implementation, we recommend targeted training programmes focused on hands-on sessions for server and network management. To achieve this digital learning platforms can be introduced. For instance, integration of e-learning modules and tutorials tailored to healthcare workers. On-the-job support is crucial and to achieve this the establishment of IT support teams at healthcare institutions could be done. Regular workshops can be arranged for continuous professional development and to keep pace with technological advancements. These measures will not only improve IT competencies among healthcare workers but also ensure the long-term sustainability of digital health initiatives in Sri Lanka.

References

1. Mudavadi OM, Nyaberi JM, Nyamai J. Health system factors contributing to the utilization of EMR among health workers in selected level iii and iv hospitals in Siaya county, Kenya [Internet]. Vol. 2, Medicine and Nursing. 2023. Available from: https://iajournals.org/articles/iajhmn_v2_i1_363_379.pdf
2. Sharma M, Aggarwal H. EHR Adoption in India: Potential and the Challenges. Indian J Sci Technol. 2016 Sep 22;9(34).
<https://doi.org/10.17485/ijst/2016/v9i34/100211>
3. Agyemang E, Adu-Gyamfi A, Esia-Donkoh K, Achampong E. Effective use of electronic health records system for healthcare delivery in Ghana. Frontiers in Health Informatics. 2023 Nov 15;12:169.
<https://doi.org/10.30699/fhi.v12i0.510>
4. Janse van Rensburg ED, Oguttu JW. Blended teaching and learning: Exploring the concept, barriers to implementation and designing of learning resources. South African Journal of Higher Education. 2022;
<https://doi.org/10.20853/36-6-4595>
5. Katrina Navallo | Keith Detros. Advancing the Digital Health Ecosystem in Southeast Asia 2023. Available from: <https://fulcrum.sg/aseanfocus/advancing-the-digital-health-ecosystem-in-southeast-asia/>.