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Original Research Article

Challenges Among Nurses in Implementing Electronic Health Records (EHRs) at District Base Hospital, Teldeniya

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ABSTRACT

Electronic Health Records (EHRs) are digital versions of patients' medical records that enhance the safety, efficiency, and quality of healthcare delivery. Despite their potential benefits, the implementation of EHR systems remains challenging, particularly in developing countries. In Sri Lanka, only a limited number of hospitals have adopted EHR systems. District Base Hospital, Teldeniya, has successfully implemented an EHR system in the Outpatient Department and selected clinical units; however, nurses continue to experience various challenges during its implementation.

This study aimed to identify the personal and institutional challenges faced by nurses in implementing Electronic Health Records at District Base Hospital, Teldeniya. A quantitative descriptive research design was employed using a self-administered questionnaire. A convenience sample of 100 nurses participated in the study, and the collected data were analyzed using descriptive statistics with the Statistical Package for the Social Sciences (SPSS) version 25.

The findings revealed that the major challenges experienced by nurses included inadequate continuous training, frequent interruptions during EHR use, lack of confidence and belief in the EHR system, insufficient computer training, and technical problems such as power failures and network interruptions. Although most participants expressed positive attitudes toward EHRs, these personal and institutional barriers affected the effective implementation of the system.

The study concludes that strengthening continuous professional development, improving technical infrastructure, and providing regular computer and EHR-related training are essential to enhance the successful implementation of Electronic Health Records. The findings may assist hospital administrators and the Ministry of Health in developing appropriate strategies to improve EHR adoption and utilization among nurses in Sri Lanka.

1. Introduction

Electronic Health Records (EHRs) are digital repositories of patients' health information that enable authorized healthcare professionals to access and share patient data, thereby improving continuity, quality, and efficiency of healthcare delivery (Häyrinen et al., 2008). The implementation of EHR systems has expanded globally across both developed and developing countries because of their potential to enhance patient safety, healthcare efficiency, and the overall quality of clinical services (Amal et al., 2013). Despite these advantages, the adoption of EHR systems remains relatively limited in many healthcare settings due to various technical, organizational, and human-related challenges (Davidson & Heslinga, 2007).

The implementation of EHRs has been recognized as an effective approach to improving healthcare quality by

enhancing patient safety, reducing medical errors, facilitating timely access to patient information, and supporting evidence-based clinical decision-making (Culley et al., 2012). In many developing countries, including Sri Lanka, patient information is still predominantly maintained using paper-based records. Such records are often incomplete, difficult to retrieve, illegible, fragmented, and susceptible to loss, thereby affecting the quality and continuity of patient care (Miller et al., 2005).

The Ministry of Health of Sri Lanka introduced the National Digital Health Guidelines and Standards in 2016 to promote the implementation of electronic health solutions across the country's healthcare system. These guidelines were developed to standardize digital health initiatives in both public and private healthcare institutions and to facilitate the successful implementation of health information technologies.

Although EHR systems offer significant advantages over traditional paper-based documentation, several barriers continue to hinder their successful implementation in developing countries. Common challenges include inadequate infrastructure, limited financial resources, insufficient computer literacy, staff shortages, and inadequate technical support (Fall, 2018). Previous studies have also identified resistance to technological change, lack of confidence in computer systems, and limited information technology knowledge among nurses as major obstacles to successful EHR implementation (Courtney et al., 2015; Frust et al., 2013).

In Sri Lanka, complete Electronic Health Record systems have not yet been fully implemented nationwide. However, several hospitals have successfully computerized portions of their healthcare services. Jayewardene et al. (2010) reported that the Electronic Health Information System has been successfully implemented at the District General Hospital, Trincomalee, where the Outpatient Department operates a fully computerized health information system. Nevertheless, documentation remains a considerable burden in many government hospitals, and previous attempts to computerize hospital records have achieved only limited success (Denham, 2010).

District Base Hospital, Teldeniya, has recently introduced an Electronic Health Record system in the Outpatient Department and selected clinical units. While the implementation represents a significant advancement in healthcare delivery, nurses continue to encounter various personal and institutional challenges during its use. Limited evidence is available regarding these challenges within the Sri Lankan healthcare context, particularly at District Base Hospital, Teldeniya. Understanding these barriers is essential for improving EHR implementation, supporting nursing practice, and enhancing the quality of patient care.

2. Methodology

2.1 Study Design

This study employed a **quantitative descriptive, non-experimental research design** to identify the challenges experienced by nurses during the implementation of Electronic Health Records (EHRs) at District Base Hospital, Teldeniya. A quantitative descriptive approach was considered appropriate because it enabled the researchers to systematically describe nurses' experiences and perceptions regarding EHR implementation using structured data collected from a relatively large number of participants.

2.2 Study Setting

The study was conducted at **District Base Hospital, Teldeniya**, Sri Lanka, where the Electronic Health Record (EHR) system had been implemented in the Outpatient Department and selected clinical units. The hospital provided an appropriate setting for investigating the personal and institutional challenges experienced by nurses during EHR implementation.

2.3 Study Population and Sample

The study population consisted of registered nurses working at District Base Hospital, Teldeniya. A **non-probability**

Therefore, this study was conducted to identify the personal and institutional challenges experienced by nurses during the implementation of Electronic Health Records at District Base Hospital, Teldeniya. The findings are expected to assist hospital administrators and policymakers in developing strategies to strengthen EHR implementation and improve the effective utilization of digital health technologies within Sri Lankan healthcare institutions.

1.1 Aim of the Study

The aim of this study was to assess the challenges faced by nurses in implementing Electronic Health Records (EHRs) at District Base Hospital, Teldeniya, Sri Lanka.

1.2 Objectives of the Study

General Objective

To identify the personal and institutional challenges experienced by nurses during the implementation of Electronic Health Records (EHRs) at District Base Hospital, Teldeniya.

Specific Objectives

- To identify the personal challenges experienced by nurses during the implementation of Electronic Health Records.
- To assess the institutional challenges affecting the implementation of Electronic Health Records.
- To examine nurses' perceptions and experiences regarding the use of Electronic Health Records.
- To provide recommendations for improving the implementation and effective utilization of Electronic Health Records among nurses.

convenience sampling technique was used to recruit participants who met the study's inclusion criteria and were willing to participate.

A total of **100 nurses** participated in the study, resulting in a **100% response rate**.

2.4 Data Collection

Data were collected using a **self-administered structured questionnaire**. Prior to data collection, the researchers introduced the study to the nursing staff and explained its purpose and procedures. Participants received an information sheet describing the objectives, potential risks, and benefits of the study.

Written informed consent was obtained from all participants before questionnaire administration. Participation was entirely voluntary, and participants were informed of their right to withdraw from the study at any stage without any consequences. To ensure anonymity and confidentiality, each questionnaire was assigned a serial number rather than participant identifiers. All collected data were stored securely in password-protected electronic files accessible only to the principal investigator and co-investigators.

2.5 Ethical Considerations

Ethical approval for the study was obtained from the **Ethics Review Committee of the National Hospital, Kandy**. Administrative permission was granted by the Provincial Director of Health Services, the Medical Superintendent, and the Matron of District Base Hospital, Teldeniya before commencement of the study.

The study was conducted in accordance with accepted ethical principles governing research involving human participants.

2.6 Data Analysis

The collected data were entered and analyzed using the **Statistical Package for the Social Sciences (SPSS) version 25**.

Descriptive statistical methods, including frequencies, percentages, means, and standard deviations, were used to

TABLE 1 Demographic characteristics of participants (n=100)

Characteristics	Category	N	%
Gender	Female	91	91.0
	Male	9	9.0
Age (in years)	20 – 30	31	31.0
	31 – 40	48	48.0
	41 – 50	9	9.0
	51 – 60	12	12.0
Professional qualification	Diploma in nursing	100	100
	Bachelor of nursing	5	5.0
Formal computer training	Yes	60	60.0
	No	40	40.0
EHR experience	< 3 months	34	34.0
	months – 1 year	23	23.0
	1 – 5 years	42	42.0
	>5 years	1	1.0

3. Results

3.1 Demographic Characteristics of the Participants

A total of **100 nurses** participated in the study, resulting in a **100% response rate**. The majority of participants were female (**91.0%**), while **9.0%** were male. Nearly half of the participants (**48.0%**) belonged to the **31–40 years** age group. All participants possessed a diploma in nursing, and **5.0%** had obtained a bachelor's degree. Regarding computer literacy, **60.0%** had received formal computer training, whereas **40.0%** had not. The largest proportion of participants (**42.0%**) had **1–5 years** of experience using Electronic Health Records (EHRs).

The demographic characteristics of the participants are presented in Table 1.

3.2 Personal Challenges Experienced by Nurses in Implementing Electronic Health Records

The personal challenges experienced by nurses during the implementation of Electronic Health Records are presented in **Table 2**.

summarize participant characteristics and responses related to personal and institutional challenges associated with Electronic Health Record implementation. The findings are presented using tables and graphical illustrations where appropriate.

2.7 Demographic Characteristics of Participants

A total of **100 nurses** participated in the study, yielding a **100% response rate**. The majority of participants were female (**91.0%**), while **9.0%** were male. Most participants were aged **31–40 years (48.0%)**. All participants possessed a diploma in nursing, and **5.0%** had obtained a bachelor's degree. Regarding computer training, **60.0%** had received formal computer training, whereas **40.0%** had not. In terms of EHR experience, the largest proportion (**42.0%**) had between **one and five years** of experience using Electronic Health Records.

Overall, the findings indicate that nurses had a positive perception of the EHR system. Most participants agreed that the system was easy to learn, useful in clinical practice, helpful in patient care, relevant to their work, and enhanced patient privacy. The majority also reported being confident in using the EHR system and expressed general satisfaction with its use.

Despite these positive perceptions, several personal challenges were identified. Approximately **40%** of the participants had not received formal computer training, which may have influenced their confidence and effective use of the system. Nearly half of the participants also reported a lack of confidence or belief in the EHR system, indicating that personal attitudes remain an important barrier to successful implementation.

Furthermore, younger nurses and those with higher educational qualifications demonstrated more positive attitudes toward the use of Electronic Health Records than other participants.

The detailed results are presented in Table 2 and Graph 1.

3.3 Institutional Challenges Experienced by Nurses in Implementing Electronic Health Records

The institutional challenges associated with Electronic Health Record implementation are presented in **Table 3**.

Most participants reported that technical support services were dependable. However, several institutional barriers continued to affect the successful implementation of the EHR system. The majority of nurses reported experiencing frequent interruptions while using the system and indicated that continuous training opportunities were inadequate.

Although many participants agreed that they had sufficient time to become familiar with the system and that the training

International Journal of Clinical and Biomedical Sciences; 1(2)2026. pp:115-123 received was relevant to their work, a considerable proportion reported experiencing frequent technical problems during EHR use.

Responses to the open-ended question further revealed additional sources of frustration. Participants reported that the EHR system could not be used in certain hospital units or other healthcare facilities. They also identified power failures, network interruptions, software errors, and system failures as significant challenges affecting the effective utilization of Electronic Health Records.

The institutional challenges are summarized in Table 3 and Graphs 2 and 3.

TABLE 2: Personal challenges on EHR (n=100)

Item	Strongly Disagree n %	Disagree n %	Agree n %	Strongly Agree n %	Mean	SD
1. EHR is easy to learn and use	1	3	72	24	6.03	0.75819
2. EHR is useful	2		72	26	6.09	0.73985
3. EHR is helpful in patient care		1	72	27	6.05	0.74366
4. EHR relevant to my work	2	4	74	20	5.95	0.83333
5. EHR maintain privacy of patient		6	63	31	5.95	1.0187
6. Computerized chart decreased nurses work load	2	11	76	11	5.51	1.19337
7. I am satisfied with EHR		9	74	17	5.62	1.05198
8. I am confident with EHR		6	63	31	6.03	0.90403
9. Lack of belief in EHR	10	46	43	1	3.91	1.72969

GRAPH 1: Personal challenges on EHR

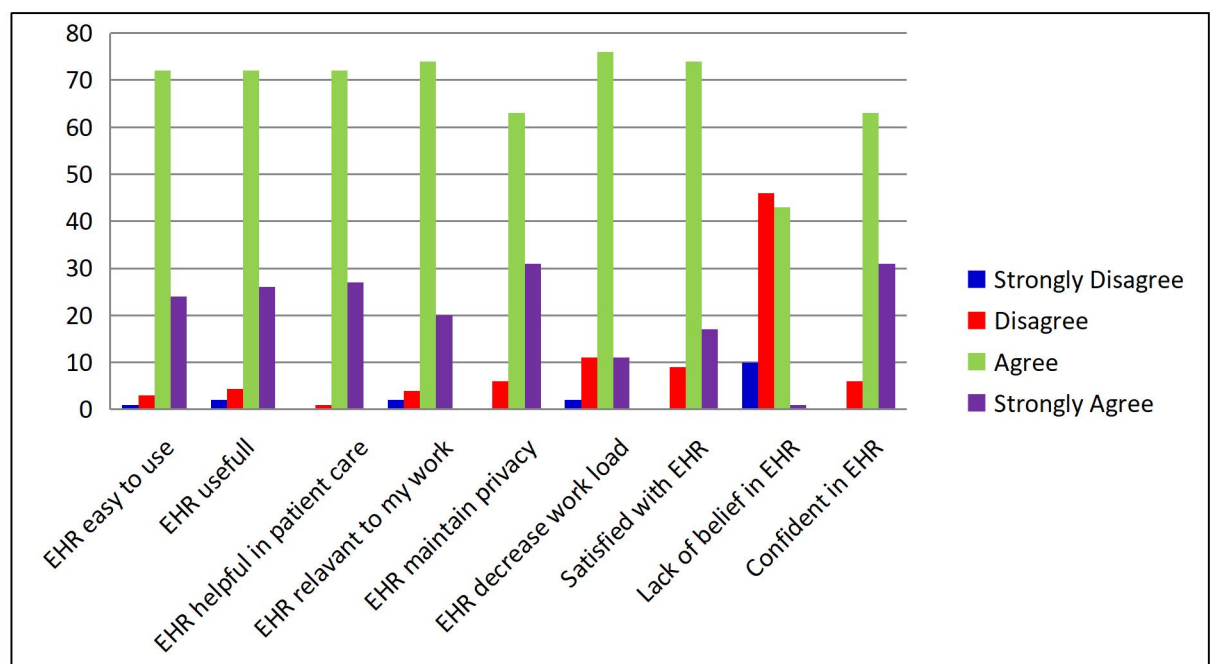
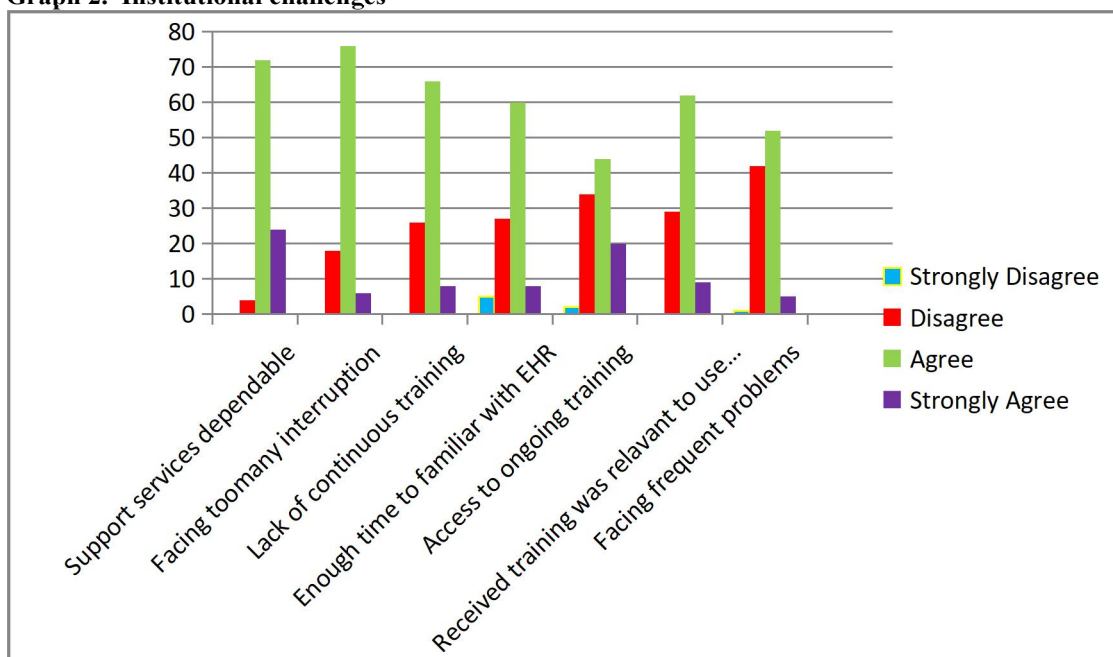
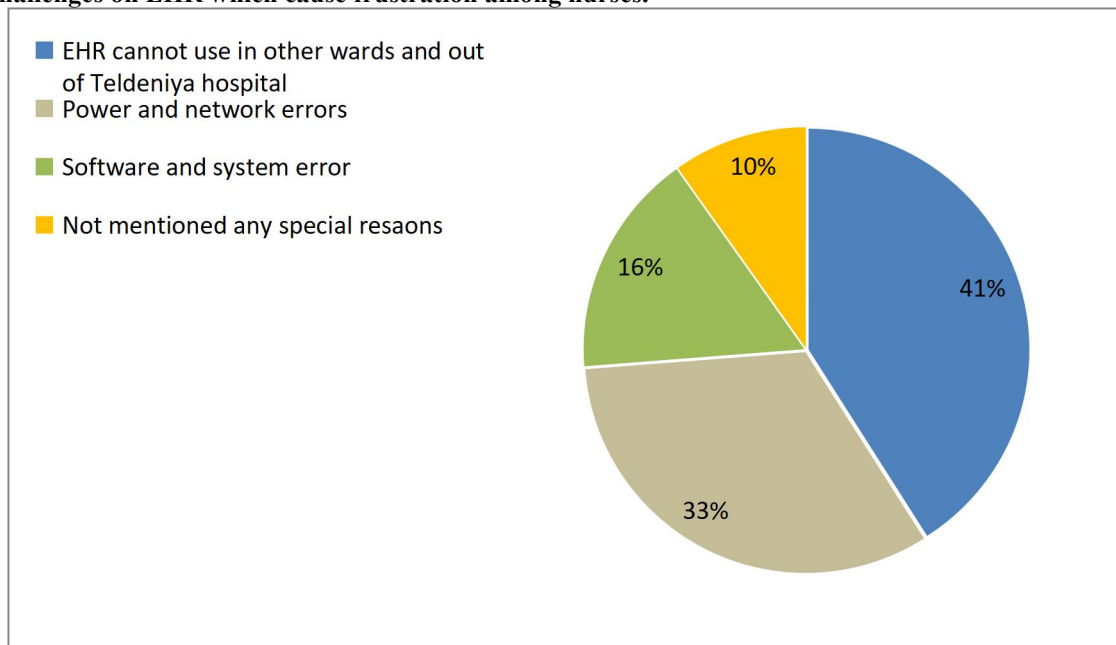


TABLE 3 Institutional challenges on EHR

Item	Strongly Disagree n %	Disagree n %	Agree n %	Strongly Agree n %	Mean	SD
1. Support service is dependable		4	72	24	5.81	0.96080
2. I am facing too many interruptions		18	76	6	5.14	1.18935
3. Lack of continuous training		26	66	8	5.01	1.18488
4. Enough time for me to familiarize with the system	5	27	60	8	4.82	1.63534
5. I have access to ongoing training	2	34	44	20	4.84	1.71576
6. The training I received was relevant to how I use the system		29	62	9	5.09	1.20684
7. I am facing frequent problems	1	42	52	5	5.06	4.04475
8. Has improve communication with other health service provider	1	14	63	22	5.51	1.45987
9. Has facilitated me to exchange care strategies with co workers		21	61	18	5.45	1.40256

Graph 2. Institutional challenges

Graph 3: Challenges on EHR which cause frustration among nurses.

4. Discussion

The present study examined the personal and institutional challenges experienced by nurses during the implementation of Electronic Health Records (EHRs) at District Base Hospital, Teldeniya. The findings indicate that although nurses generally demonstrated positive attitudes toward the EHR system, several personal and organizational barriers continue to affect its effective implementation.

The findings revealed that 60% of the participants had received formal computer training, indicating a moderate level of computer literacy among the nursing staff. This finding is consistent with the study conducted by Azza (2012), which reported that 66.5% of nurses in Saudi Arabia possessed adequate computer skills. Similarly, Medha et al. (2016) found that approximately three-quarters of Indian nurses had basic computer competency. These findings suggest that computer literacy among nurses has improved over time, thereby facilitating the adoption of electronic health technologies.

The present study further demonstrated that the majority of nurses perceived the Electronic Health Record system as easy to learn and useful in clinical practice. More than 90% of participants reported that the system was easy to use and beneficial for patient care. However, these findings differ from those reported by Hsiao et al. (2011), where only 45.1% of nurses perceived EHR systems as easy to use. Differences in hospital infrastructure, user training, and organizational support may explain this variation.

Most participants also reported confidence in using the Electronic Health Record system. However, a considerable proportion indicated a lack of confidence and belief in the effectiveness of the system. Similar concerns have been reported by Ahmed (2017) and Azza (2015), who identified limited user confidence and resistance to technological change as significant barriers to successful EHR implementation among nurses.

Institutional challenges also emerged as important barriers to successful implementation. Although participants generally perceived technical support services as dependable, they reported frequent interruptions during system use, inadequate continuous training, and recurring technical problems. Similar findings have been documented in studies conducted in Singapore, Saudi Arabia, and India, where insufficient training, technical issues, and system interruptions were identified as major obstacles to effective EHR implementation (Ahmed, 2017; Azza, 2012; Medha et al., 2016).

Responses to the open-ended question further highlighted practical challenges encountered by nurses, including power failures, unstable network connectivity, software errors, and the inability to use the EHR system in certain hospital units or healthcare facilities. These findings emphasize the importance of strengthening technical infrastructure and providing continuous technical support to ensure the successful and sustainable implementation of Electronic Health Records.

Overall, the findings suggest that while nurses recognize the benefits of Electronic Health Records, successful implementation requires continuous professional training, improved technical infrastructure, reliable system maintenance, and sustained organizational support. Addressing these challenges is likely to improve user acceptance, increase system utilization, and enhance the quality and efficiency of healthcare delivery.

5. Conclusion

This study mainly focused on Challenges among nurses on EHR in District Base Hospital, Teldeniya. Study findings suggested that majority of nurses have formal computer training but they face challenges while implementing EHRs. This study explored the findings of participants through self administered questionnaire.

Most identified personal challenges in this study were, lack of formal computer training, lack of belief in EHRs.

And also most identified institutional challenges were support service is dependable, facing too many interruptions, lack of continuous training, frequent problems on EHRs, cannot use in other hospitals, power, network and software errors and poor maintenance by technical staff.

The results of this study can provide importance to the hospital managers to understand these challenges and researchers requested them to make policies and strategies to overcome those challenges in future.

Recommendation

Recommendations based on the findings of this study are, orientation training should be provided for new nurses and continuous training should be arranged based on computer and EHR for all nursing staffs. Appoint adequate technological supportive staff. Maintain proper power supply and make sure continuous network without failure. The Ministry of Health must customize the EHR system according to each hospital needs. We suggested future researchers to identify the challenges among patients while implementing EHR.

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