Dissertation Report

at

KareXpert Technologies Pvt Ltd.

Assessing Electronic Health Record (EHR) Implementation Readiness and Perceived Barriers Among Nurses: A Mixed-Methods Approach at Vasant Rao Pawar Medical College (Nashik)

by

Ankit Pal

Enrollment No.- **PG/23/018**

Under the guidance of

Dr. Sumant Swain

PGDM (Hospital and Health Management) 2023-25

International Institute of Health Management Research,

New Delhi

International Institute of Health Management Research, New Delhi

Dissertation Training

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ankit Pal**, student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at **KareXpert Technologies Pvt LTD.** From **17/02/2025 to 16/05/2025.**

The Candidate has successfully carried out the study designated to him during internship training and his/her approach to the study has been sincere, scientific and analytical.

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I wish him all success in all his/her future endeavors.

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Associate Dean, Academic and Student Affairs
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(Completion of Dissertation from respective organization)

The certificate is awarded to

Ankit Pal

in recognition of having successfully completed his/her internship in the department of

Project Delivery

and has successfully completed his/her Project on

Assessing Electronic Health Record (EHR) Implementation Readiness and Perceived Barriers Among Nurses: A Mixed-Methods Approach at Vasant Rao Pawar Medical College(Nashik)

Date- 30 May 2025

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The following dissertation titled Assessing **Electronic Medical Record Implementation perceived barriers among Nurses at Vasant Rao Pawar medical college** at **Nashik** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

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This is to certify that **Mr. Ankit Pal,** a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. He/ She is submitting this dissertation titled " Assessing Electronic Health Record (EHR) Implementation Readiness and Perceived Barriers Among Nurses: A Mixed-Methods Approach at Vasant Rao Pawar Medical College (Nashik)" at "KareXpert Technologies Pvt LTD." in partial fulfillment of the requirements for the award of the **PGDM (Hospital & Health Management).**

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Assistant Professor,

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Bharat More
Deputy General Manager,

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CERTIFICATE BY SCHOLAR

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Area of Dissertation: Project Delivery

Attendance: 100%

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Working on this dissertation has been a truly enriching experience, both in terms of learning and personal growth. I feel fortunate to have had the chance to carry out my research at **KareXpert Technologies**, where the practical exposure and guidance from experienced professionals added immense value to my work.

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To everyone who helped me along the way—thank you. Your contributions, whether big or small, truly made a difference.

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LIST OF ABBREVIATIONS

HMIS- Hospital Management Information System OPD- Out-patient Department

IPD- In-patient Department

EMR- Electronic Medical Record

LIS- Laboratory Information System

RIS- Radiology Information System

Scope of the Project

The scope of this dissertation study is to assess the effectiveness of Hospital Information System (HIS) training within the doctors and nurses in outpatient registration, medication indentation and overall EMR utilization in **DRVPMC** Hospital, **Nashik**. The study will focus on evaluating the impact of HIS training programs on the proficiency and performance of doctors and nurses in overall EMR compliance. It will be conducted exclusively within the Vishakhapatnam unit of **DRVPMC Hospital**, concentrating on the EMR utility for inpatients and outpatient consultations, which plays a crucial role in revenue management and patient service delivery. The project will adhere to a defined time frame for data collection, analysis, and reporting, encompassing both pre-Go-Live training and post Go-live support to the clinical staff members of the hospital. Participant selection will include nursing staff members, all the in-house consultants, surgeons and relevant personnel engaged in utilizing HIS for OP & IP EMR. Evaluation methodologies will include both quantitative and qualitative approaches to measure outcomes such as medication indentation, usage of clinical forms, entering the vitals and staff confidence levels in system usage. The study will provide practical recommendations tailored to optimize HIS training effectiveness, aiming to enhance staff competencies and improve the performance of clinical staff members in tasks such as prescription writing, vitals entry, and medication indentation within **DRVPMC Hospital**.

Abstract

The adoption of electronic health records (EHRs) has transformed the provision of healthcare services as they enable easier retrieval of patient data and optimize the flow of work. Yet, the effectiveness of the systems is dependent on the adoption readiness of healthcare workers, especially nurses, who are the frontline professionals interfacing with EHR systems.

This study assesses the adoption readiness of nursing personnel at Vasant Rao Pawar Medical College, Nashik, regarding EHR systems. It investigates the major barriers that they consider in the implementation process. A mixed-methods sequential explanatory design was used, merging quantitative surveys (n = 250) with qualitative interviews (n = 15) to provide context to the quantitative findings.

The results suggest that nurses' adoption readiness across the board was moderate to high, indicated by average scores of 4 to 4.4 out of 5. Significant obstacles identified included no formalized training (4.3), ongoing technical issues (4.0), and low organizational backing (3.5). Interviews highlighted the need for user-friendly training materials, responsive systems, and proactive IT support.

From these findings, the study is designing tailored EHR teaching courses, greater involvement of nursing personnel in design decisions, and bolstered infrastructure as immediate steps that need to be taken.

Based on these insights, the study recommends the development of structured EHR training modules, the inclusion of nursing staff in system design decisions, and the enhancement of digital infrastructure.

These strategies are particularly relevant for healthcare institutions operating in resource-constrained settings and contribute valuable perspectives to ongoing discussions on digital health transformation in India.

Findings revealed moderate to high readiness but highlighted systemic barriers such as a lack of training and IT support. Recommendations include structured training, improved involvement in planning, and continuous technical support.

Findings indicate moderate to high readiness among nurses, but several technical and organizational barriers hinder smooth adoption. Training deficiencies, limited technical support, lack of involvement in decision-making, and system usability concerns were common themes. The study concludes that while nurses are eager to adopt EHRs, organizational readiness must improve for successful implementation.

Key recommendations include capacity-building through structured training, policy reforms to ensure participatory implementation, and enhancement of IT support infrastructure. These steps are essential to harness the benefits of EHRs and ensure seamless, efficient healthcare delivery.

This dissertation evaluates the readiness of nurses at Vasant Rao Pawar Medical College (Nashik) to adopt Electronic Health Records (EHRs), exploring both technological and behavioral barriers to implementation. Using a mixed-methods sequential explanatory design, quantitative data were gathered from 250 nurses, followed by qualitative interviews with 15 selected participants.

The results revealed moderate to high readiness, with enthusiasm to learn and confidence in EHRs improving patient care. However, systemic issues such as lack of training, insufficient technical support, and exclusion from planning were major barriers.

TITLE - Assessing Electronic Health Record (EHR) Implementation Readiness and Perceived Barriers Among Nurses: A Mixed-Methods Approach at Vasant Rao Pawar Medical College (Nashik)

Section-1 Introduction

1.1 Background and Context

Electronic Health Records (EHRs) are digital versions of patient charts that provide real-time, patient-centred records accessible to authorized healthcare providers. EHRs streamline clinical workflows, reduce errors, and improve care coordination. Nurses, as frontline caregivers, spend a significant portion of their time documenting patient data in EHR systems. However, the transition from paper-based to digital records is often fraught with challenges, including resistance to change, inadequate training, and technical glitches.

In India, the adoption of EHRs has been slow due to infrastructural limitations, financial constraints, and a lack of standardized protocols. Vasant Rao Pawar Medical College, Nashik, represents a typical Indian healthcare institution where EHR implementation is at a nascent stage. Understanding nurse readiness and barriers is critical to ensuring successful adoption.

Electronic Health Records (EHRs) represent a transformative shift in the way patient data is managed, shared, and utilized in modern healthcare settings. They replace traditional paper-based records with digital formats, allowing seamless access to patient histories, treatment plans, lab results, and medication schedules.

The growing emphasis on quality care, patient safety, and streamlined workflows has made EHR adoption a critical agenda in hospitals and medical institutions across India. Among various healthcare professionals, nurses are the most frequent users of EHRs. They are responsible for documenting care, monitoring patient progress, coordinating with physicians, and ensuring that up-to-date information is accurately captured and accessible.

However, despite the potential benefits of EHRs, the implementation process is often marred by resistance, technical issues, and insufficient training. Understanding how nurses perceive these systems and how prepared they are for this digital transformation is vital to ensuring the success of health IT initiatives.

This study focuses on evaluating the readiness and challenges experienced by nurses at Vasant Rao Pawar Medical College, Nashik—a tertiary care hospital actively working toward digital integration. By identifying perceived barriers and gauging readiness, this research aims to bridge the gap between policy-level decisions and ground-level realities in EHR adoption.

1.2 ELECTRONIC HEALTH RECORD

Current digital health technologies, such as Electronic Health Records (EHRs), have transformed the management of patient care by providing electronic and instantaneous access to patient data. Aside from improving the accuracy and retrieval of information, EHRs have also been shown to enhance clinical workflows and interdepartmental coordination.

However, the EHR system's healthcare utilization features are only as useful as the health professionals' readiness to embrace new changes. Nurses, for instance, are the most active participants in the EHR system as they take part in admission and patient documentation as well as monitoring and physician interactions.

With the National Digital Health Mission, India has made progress towards achieving digital health goals. Nevertheless, healthcare organizations, especially in semi-urban and rural areas, still struggle with system implementation due to a lack of adequate training, insufficient infrastructure, inadequate workforce, and resistance to change.

This research investigates the adoption of EHRs among nurses from Vasant Rao Pawar Medical College, Nashik. Also investigated are the perceived technical and behavioural counter factors that may impact the adoption and sustainability of EHR systems in other comparable contexts with limited resources.

1.3 Rationale

The incorporation of Electronic Health Records (EHRs) into healthcare frameworks signifies a revolutionary change in the provision and administration of patient care. Worldwide, EHRs are acknowledged for their ability to improve clinical decision-making, foster continuity of care, decrease medical errors, and promote evidence-based practices. In India, the shift towards digital health platforms, especially via the National Digital Health Mission (NDHM), indicates a robust policy dedication to implementing EHRs in both public and private healthcare sectors.

Notwithstanding these improvements, the adoption of EHRs in Indian healthcare facilities is inconsistent, especially in resource-constrained or semi-urban regions. A crucial element affecting the success of EHR implementation is the preparedness of frontline healthcare staff, particularly nurses, who primarily utilize EHR systems. Nurses engage with EHRs throughout each phase of patient care, including admission, medication administration, progress notes, and discharge documentation. Their mindsets, digital skills, and self-assurance in utilizing these systems greatly influence the effectiveness of EHR implementation and maintenance.

Nevertheless, current literature and field observations indicate that nurses frequently encounter various difficulties when shifting from manual to digital documentation systems. These obstacles encompass inadequate training, minimal participation in system design, technical difficulties, time constraints, and anxiety over documentation mistakes. Numerous hospitals implement EHR systems without sufficiently training staff for the transition, leading to underuse, mistakes, and dissatisfaction among users. Additionally, the intricate nature of EHR systems, when not customized to the workflows of nurses, may lead to increased resistance and inefficiencies.

At Vasant Rao Pawar Medical College in Nashik, a tertiary care facility situated in a semi-urban area of India, evaluating nurses' preparedness is increasingly vital. As this organization advances towards digital transformation, it is crucial to grasp the extent of readiness among its nursing personnel—and the particular obstacles they identify—for developing a successful.

1.4 Aim

To evaluate the readiness of nurses to implement Electronic Health Record (EHR) systems to identify the primary perceived barriers potentially limiting successful adoption of EHR systems at Vasant Rao Pawar Medical College, Nashik.

1.5 Objectives

Primary Objective- To identify and analyze the technical, behavioural, and organizational barriers perceived by nurses concerning EHR implementation.

Secondary Objectives-

- To examine the relationship between demographic variables (such as age, experience, and department) and EHR readiness among nurses.
- To collect qualitative perspectives on challenges and supports from nurses through interviews.
- To recommend approaches that may support improvement in EHR readiness, adoption outcomes, and reduce implementation barriers in a resource-challenged health care environment.

Section 2 – Review of Literature

Since nurses operate the health information systems most often on a day-to-day basis, their duties include patients' vital observations, documentation of clinical notes, medication administration, and maintenance of continuity of care.

It is asserted all through the literature that the successful implementation of EHRs largely depends on the nurse readiness (McBride & Tietze, 2017).

Topaz et al (2016) found a positive correlation in aspirations for the successful adoption of EHR systems with nurses feeling confident in their ability to use the system and perceiving the system as beneficial. With the lack of appropriate training and resistance to change, workarounds will emerge, along with incomplete documentation, which will then compromise patient safety.

International Studies on Readiness and Barriers

Various factors have been considered by international research in relation to EHR adoption by nurses. Gagnon et al. (2012) discussed readiness in terms of technical abilities, organizational support, usefulness, and ease of use.

Similarly, Kelley et al. (2016) found that nurses in the United States characterized high readiness levels with consistent technical training and participation in system design decisions.

However, in many settings, nurses have reported having little influence or involvement in the process.

Section – 3

3.1 Research Questions

The central research question guiding this study is:

"What is the level of readiness among nurses to adopt Electronic Health Records (EHRs), and what are the key technical and behavioural barriers they perceive during the implementation process?"

To support this overarching question, the study also addresses the following sub-questions:

1. What is the current level of EHR adoption readiness among nurses at Vasant Rao Pawar Medical College, Nashik?

2. What are the major perceived challenges related to EHR implementation from a nursing perspective?

3. How do demographic and professional variables (e.g., age, years of experience, department) influence EHR readiness?

Section-4

Methodology

4.1 Research Design

This study adopts a Mixed-Methods Sequential Explanatory Design, which integrates both quantitative and qualitative approaches in a two-phase process.

Phase 1: Quantitative Approach

A structured, self-administered questionnaire was distributed to 250 registered nurses across departments at Vasant Rao Pawar Medical College.

The questionnaire used a 5-point Likert scale to measure readiness across domains such as confidence, willingness, perceived usefulness, and institutional support.

Data were analyzed using descriptive statistics (mean, frequency, standard deviation) with Microsoft Excel.

Phase 2: Qualitative Approach

In-depth semi-structured interviews were conducted with 12–15 purposively selected nurses who represented diverse experience levels and clinical areas.

The aim was to contextualize and elaborate on the quantitative results.

Qualitative data were analyzed using thematic analysis, identifying recurring patterns, barriers, and actionable suggestions.

4.2 Data Collection

The data collection for this study was carried out in two distinct but interconnected phases, aligned with the mixed-methods sequential explanatory design. The purpose of this approach was to first quantify the level of EHR readiness among nurses through surveys and then deepen the understanding of their perspectives through qualitative interviews.

4.2.1 Phase I: Quantitative Data Collection

In the first phase, a structured questionnaire was administered to 250 nurses working at Vasant Rao Pawar Medical College, Nashik. The questionnaire was developed based on existing EHR readiness models and included items assessing:

- Perceived usefulness of EHRs
- Confidence in using digital tools
- Willingness to adopt and learn
- Organizational support and training availability
- Perceived technical barriers

Each item was measured using a 5-point Likert scale, ranging from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). The survey was conducted in person during scheduled shifts, ensuring minimal disruption to clinical duties. Respondents were given a brief overview of the study's objectives and assured of anonymity and voluntary participation. Completed questionnaires were collected on the spot and securely stored for analysis.

4.2.2 Phase II: Qualitative Data Collection

Following the survey, a purposive sample of 12–15 nurses was selected for semi-structured interviews. Participants were chosen based on department, years of experience, and their openness to share insights during the survey phase. The interviews were conducted face-to-face in a quiet, private room within the hospital premises.

An interview guide was developed to explore in greater depth the themes emerging from the survey responses. Questions focused on:

- Experience with EHR training
- Perceived ease or difficulty of using the system
- Involvement in EHR decision-making
- Recommendations for improving EHR adoption

Each interview lasted approximately 25–30 minutes and was recorded with prior consent. The data were transcribed verbatim and analyzed using thematic analysis to identify common patterns and unique perspectives.

4.3 Research Ethics

Introduction and informed consent

Title of Study:

Assessing Readiness and Perceived Barriers Among Nurses for Electronic Health Record (EHR) Implementation

Principal Investigator:

Ankit Pal

International institute of health management research, New-Delhi.

You are invited to participate in a research study aiming to assess the readiness and identify the barriers experienced by nurses in the implementation of Electronic Health Records (EHRs). Your participation in this study is voluntary.

What will you be asked to do?

You will be asked to complete a questionnaire that includes questions on your demographic information, level of readiness for EHR use, and any challenges you may have faced in using such systems. The survey will take approximately 10–15 minutes.

Confidentiality

All information you provide will be kept strictly confidential. Your responses will be used only for research purposes and will be reported anonymously. No identifying information will be shared with anyone outside the research team.

Voluntary Participation

Your participation is completely voluntary. You may refuse to participate or withdraw from the study at any time without giving any reason and without any impact on your job or work environment.

Benefits and Risks

There are no direct benefits or risks associated with your participation. However, your input will help improve EHR implementation strategies and nursing informatics training programs in the future.

Consent Declaration

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Section 5 – Results

This chapter presents the findings from both the quantitative survey and the qualitative interviews conducted among nurses at Vasant Rao Pawar Medical College, Nashik. The results are organized into two sections: quantitative data analysis followed by key themes identified from qualitative interviews.

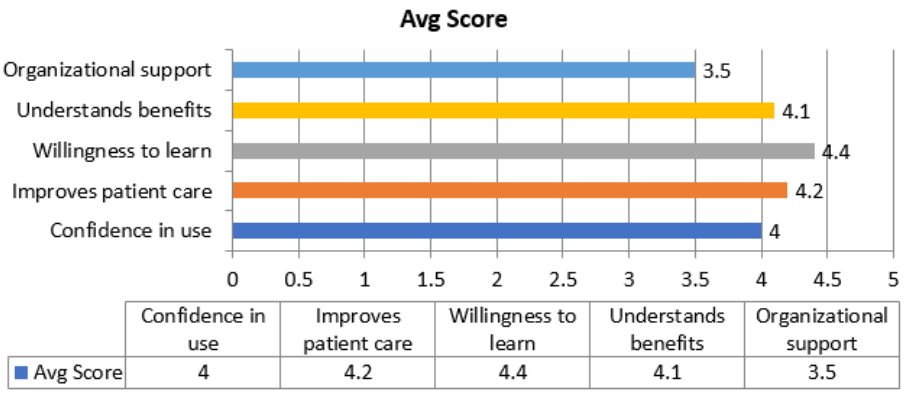
5.1 Quantitative Results

A total of **250 nurses** participated in the structured survey. The demographic profile of the respondents included:

- **Age distribution**: 20–30 years (44%), 31–40 years (34%), 41–50 years (16%), above 50 years (6%)
- **Gender**: 83% female, 17% male
- **Work experience**: 1–5 years (42%), 6–10 years (36%), more than 10 years (22%)
- **Departments represented**: OPD, IPD, ICU, Emergency, Maternity, Pediatrics

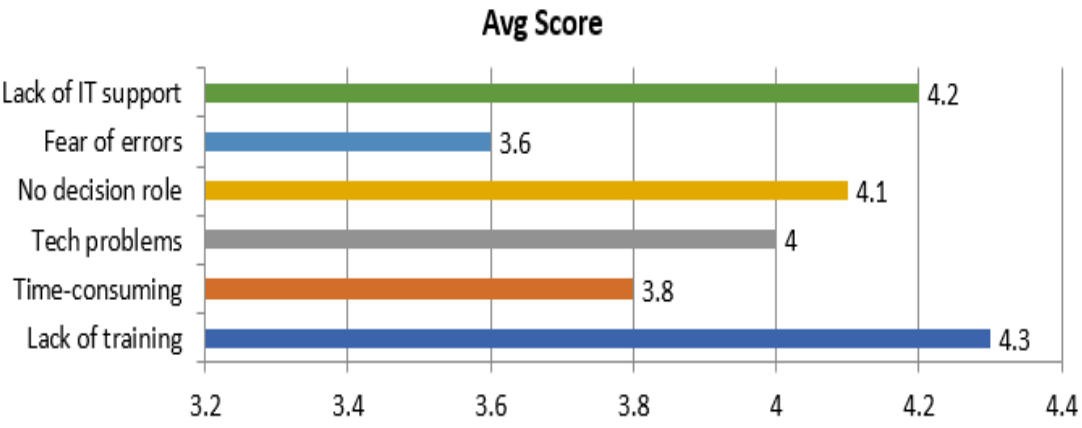
5.1.1 EHR Readiness Scores

The overall EHR readiness among nurses was assessed across five core domains. The mean scores (on a 5-point Likert scale) are shown below:



5.1.2 Perceived Barriers

Respondents identified several key barriers to effective EHR implementation, summarized below:



	Lack of training	Time-consuming	Tech problems	No decision role	Fear of errors	Lack of IT support
Avg Score	4.3	3.8	4	4.1	3.6	4.2

5.2 Qualitative Results

In-depth interviews were conducted with **15 nurses** selected based on years of experience and department diversity. Thematic analysis of the interview transcripts revealed four major themes:

Theme 1: Inadequate Training and Onboarding

Most nurses expressed that they had received little or no structured training on using the EHR system. Those who did attend orientation sessions found them too short or too technical.

"We were just shown the system once for a few minutes. Then we had to learn it ourselves." – Nurse, ICU.

Theme 2: System Complexity and Interface Issues

Many nurses found the EHR interface complicated, especially when multitasking during high-pressure shifts.

"It takes too long to enter data. Sometimes we avoid it to save time." – Nurse, Emergency Dept.

Theme 3: Lack of Inclusion in Planning

Nurses felt that decisions regarding EHR systems were made without consulting them.

"Nobody asked us how we use the records. If they had, the system would be different." – Senior Nurse, IPD

Theme 4: Supportive Attitude Toward EHR Goals

Despite frustrations, most nurses were optimistic about the potential of EHRs to improve patient care—if implementation challenges were addressed.

"EHRs are good. But we need support and time to learn them properly."

This section outlines the key findings derived from both the quantitative survey and the qualitative interviews conducted with nurses at Vasant Rao Pawar Medical College, Nashik. The findings provide a clear picture of the current state of EHR readiness and perceived barriers among nursing professionals.

Section 6

Summary of Quantitative Findings

1. **Overall Readiness**:
   Nurses demonstrated **moderate to high levels of readiness** to adopt Electronic Health Records (EHRs). The highest scoring readiness domains were:
   - *Willingness to learn* (mean score: 4.4/5)
   - *Belief in EHR improving patient care* (4.2/5)

- *Confidence in using EHRs* (4.0/5)

2. **Low Organizational Support**:
   Nurses perceived a lack of institutional support, reflected in a low mean score of **3.5/5** for the *Organizational Support* domain.

3. **Key Barriers Identified**:
   - *Lack of structured training* was the most significant barrier (4.3/5).
   - *Technical difficulties* (4.0/5) and *insufficient IT support* (4.2/5) were frequently reported.
   - *Exclusion from planning and decision-making* scored 4.1/5, suggesting a lack of nurse involvement in EHR implementation efforts.

4. **Demographics and EHR Experience**:
   Younger nurses (20–30 years) and those with less than 5 years of experience showed slightly higher readiness scores, indicating a generational shift in digital comfort and openness to technology.

Summary of Qualitative Findings

From interviews with 15 nurses, four major themes emerged:

1. **Inadequate Training**:
   Many nurses reported that they had not received formal, structured training, and instead learned the EHR system informally from colleagues or through trial and error.

2. **Complex and Unintuitive Interface**:
   Users found the system interface complex and not aligned with their workflow. Some preferred continuing paper documentation for efficiency during emergencies.

3. **Exclusion from System Design**:
   Nurses expressed frustration about not being involved in planning or selecting the EHR systems. They felt their feedback was neither sought nor incorporated.

4. **Optimism and Willingness to Adopt**:
   Despite these challenges, nurses demonstrated a positive attitude toward the potential of EHRs to improve patient care, provided adequate support and training are given.

Integrated Key Findings

- While **readiness exists**, its **translation into successful EHR use** is impeded by **systemic barriers**, particularly **lack of training, technical support**, and **involvement**.
- Nurses **believe in the value of EHRs** but feel unprepared due to insufficient organizational planning.
- The gap between **policy-level digital push** and **ground-level user experience** remains significant in semi-urban Indian hospitals.

This study set out to evaluate the readiness of nurses to adopt Electronic Health Records (EHRs) at Vasant Rao Pawar Medical College, Nashik, and to identify the perceived barriers they face during implementation.

Using a mixed-methods design, the study explored both measurable trends through a quantitative survey and deeper insights through qualitative interviews. The findings suggest that while nurses demonstrate high willingness and general readiness to adopt EHRs, several systemic, organizational, and technical barriers continue to hinder successful implementation.

6.2 Discussion

6.2.1Readiness for EHR Implementation

Quantitative findings indicated a moderate level of readiness among nurses, with higher scores in cognitive and attitudinal domains, and relatively lower scores in technical readiness. Most nurses expressed willingness to adopt EHRs, recognizing their potential to improve documentation quality, reduce errors, and enhance workflow efficiency. These findings align with previous studies (e.g., Alharthi et al., 2021; Nguyen et al., 2014) that reported a generally positive attitude toward EHRs among nurses when they are properly trained and supported.

However, a significant number of respondents expressed lack of confidence in their technical skills and insufficient exposure to EHR systems, suggesting a need for more robust training programs. The positive correlation between years of experience and readiness also implies that familiarity with institutional processes may play a role in shaping one's openness to technological change.

6.2.2 Perceived Barriers to EHR Adoption

From both survey results and interview responses, several barriers to effective EHR implementation emerged:

- Inadequate training and technical support: A consistent theme was the lack of formal training opportunities, especially for older or less tech-savvy staff.
- Interface complexity: Many nurses described current EHR platforms as unintuitive and time-consuming, leading to frustration and errors.
- Workload and time constraints: Nurses felt that documentation using EHRs adds to their already heavy workload, particularly in high-pressure settings like emergency and critical care units.
- Resistance to change: Some participants expressed discomfort with the transition from paper-based systems, fearing loss of autonomy and job satisfaction.

These findings are supported by earlier studies (Top et al., 2016; Kruse et al., 2018), which highlighted user resistance, technical limitations, and poor change management as key impediments to successful EHR implementation in healthcare institutions.

6.2.3 Thematic Insights from Interviews

The qualitative data revealed a deep concern among nurses about their limited involvement in the planning and rollout of EHR systems. Participants emphasized the need for user-centered design and ongoing feedback loops between frontline staff and IT departments. There was also a call for peer mentoring programs and hands-on simulation training to ease the transition and build confidence.

Furthermore, nurses strongly advocated for simple, streamlined interfaces tailored to nursing workflows, as opposed to generalized systems that cater more to physicians or administrators.

Implications for Practice

The study highlights critical areas for intervention:

- Training: Structured and periodic training programs must be institutionalized.
- Involvement: Nurses should be included in decision-making during EHR selection and customization.
- Support: A dedicated IT support system must be available, especially during initial implementation.
- Interface Design: EHR systems must be intuitive, mobile-friendly, and tailored to nursing documentation needs.

6.3 LIMITATION

While this study provides valuable insights into the readiness and perceived barriers among nurses regarding Electronic Health Record (EHR) implementation, certain limitations must be acknowledged:

1. Limited Generalizability

The study was conducted within a selected group of hospitals and healthcare institutions, which may limit the generalizability of the findings to other settings with different organizational cultures, EHR systems, or levels of technological advancement.

2. Self-Reported Data

Both the questionnaire and interviews relied on self-reported information, which is subject to biases such as social desirability and recall bias. Participants may have underreported negative perceptions or overestimated their readiness due to professional expectations.

3. Sample Size Constraints in Qualitative Component

While data saturation was achieved in the qualitative phase, the number of interviews (12–15 nurses) may not fully capture the diversity of experiences across different departments or institutions.

4. Time and Resource Constraints

Due to time limitations and resource availability, the study could not include longitudinal follow-up or a broader comparative analysis across multiple healthcare systems.

Section 7

Readiness and Positive Attitudes

The quantitative data revealed a generally high level of EHR readiness among nurses, particularly in the domains of *willingness to learn* (4.4/5) and *belief that EHRs improve patient care* (4.2/5).

These findings are consistent with studies by Topaz et al. (2016) and Lim et al. (2021), who found that nurses tend to recognize the benefits of EHRs and are open to adopting them when the proper infrastructure and support systems are in place.

Nurses' strong willingness to engage with digital tools suggests a favorable environment for EHR implementation, provided that institutions invest in targeted training and user involvement. Younger nurses and those with fewer years of experience were found to have higher readiness scores, which aligns with global trends indicating that digital fluency is typically higher among newer health professionals.

Barriers to Effective Implementation

Despite overall readiness, nurses reported facing several significant barriers. The most cited was a **lack of formalized training** (4.3/5), followed by **technical challenges** (4.0/5) and **inadequate IT support** (4.2/5).

These issues reflect similar findings in earlier studies (Gagnon et al., 2012; Ajami & Bagheri-Tadi, 2013), where under preparedness and poor technical assistance were identified as core reasons for EHR resistance.

Qualitative interviews reinforced these concerns. Nurses consistently expressed that the training provided was either absent, rushed, or too generic. Many reported learning to use EHR systems informally from peers.

This lack of structured onboarding results in inconsistent documentation practices, delays in data entry, and increased frustration.

Another major theme that emerged was **nurses' exclusion from system design and decision-making**. Respondents shared that EHR systems were imposed without consultation, and their feedback was rarely incorporated. This lack of involvement contributes to poor workflow alignment, as systems often fail to reflect the real-world needs of nursing staff. These findings echo those of McBride & Tietze (2017), who emphasized the importance of nurse participation in system design for better adoption outcomes.

Interface and Usability Concerns

The complexity of EHR interfaces was another common issue raised in the interviews. Nurses found that navigating multiple tabs, entering repetitive data, and searching for information was time-consuming and mentally taxing.

These challenges, combined with high patient loads, led some to revert to paper documentation during peak hours.

Studies have shown that interface design is a critical success factor in EHR adoption. Systems that are not intuitive or aligned with clinical workflow increase user fatigue and decrease compliance (Carayon et al., 2019).

Addressing these usability concerns requires input from actual end-users during the development or customization phase of EHR deployment.

Organizational and Cultural Factors

The lowest quantitative score was recorded for *organizational support* (3.5/5), indicating a perceived gap between policy and practice. Nurses expressed a need for stronger managerial backing, more timely IT assistance, and ongoing feedback loops. This finding is consistent with research suggesting that institutional culture, leadership style, and communication mechanisms greatly influence technology adoption success (Kim & Park, 2022).

In resource-constrained settings like Nashik, infrastructure limitations such as limited computers, poor internet connectivity, and occasional power outages further compound these challenges. Nurses shared that shared devices and outdated systems slow down their work and discourage consistent EHR use.

Interpretation and Implications

These findings suggest that **EHR adoption among nurses is not hindered by resistance to change**, but by **insufficient investment in user preparation, involvement, and support**. The gap between system capabilities and nurse usability expectations is wide but bridgeable through institutional reforms.

To improve adoption outcomes, hospitals must:

- Provide structured, role-specific training before and after implementation
- Design or customize systems with direct input from nursing staff
- Ensure prompt and effective IT support
- Embed EHR readiness as part of ongoing clinical education

Contribution to Knowledge

This study contributes to the growing literature on digital health implementation in India, particularly by focusing on nursing professionals in a semi-urban hospital setting. It fills a significant gap by using a mixed-methods approach to provide both numeric and narrative insights, offering a well-rounded understanding of frontline challenges.

8. Conclusion and Recommendations

Conclusion

The research aimed to evaluate the preparedness of nurses to implement Electronic Health Records (EHRs) and determine what obstacles they see in the process of implementation. The research was conducted at Vasant Rao Pawar Medical College, Nashik, employing a mixed-methods sequential explanatory design involving survey data from 250 nurses and in-depth interviews of 15 participants.

The results present that although nurses display high to moderate levels of readiness—specifically in categories like willingness to learn and perceived usefulness of the EHRs—there are very significant barriers that impede effective implementation. These are a deficiency of formal training, dearth of organizational support, ineffective IT infrastructure, and disparity between system design and actual clinical workflows.

The lowest readiness area was organizational support, indicating that even with individual motivation, systemic and managerial deficits impede the shift to digital record-keeping. Thematic analysis from interviews further highlighted nurses' discontent with being excluded from the planning and customization phases of the EHR implementation, and greater need for more intuitive system design and real-time technical support.

These results corroborate those published in international and Indian literature, supporting the idea that frontline interaction, training, and infrastructure are essential to the success of digital health initiatives.

This research adds to the sparse body of nurse-centered studies on EHR adoption in Indian healthcare and provides actionable recommendations for hospital administrators and policymakers.

Recommendations

According to the findings of the research, the following are the recommendations to improve EHR readiness and nursing professional adoption:

1. Formal and Continuous Education: Establish extensive, departmental-level training

programs for nurses. Integrate simulation-based practice sessions as well as routine refresher courses.

2. User-Focused EHR Development: Engage nurses within system design, customization, and feedback loops to make the platform congruent with day-to-day procedures.
Test updates on small nursing teams before a large-scale rollout.

3. Fortified IT Support: Create a specialized technical helpdesk available during all shifts. Deploy EHR "super-users" in each unit for immediate support.

4. Improvement of Infrastructure: Provide adequate computers, stable internet,and backup mechanisms on every nursing floor. Offer mobile terminals or bedside access where possible.

5. Institutional Involvement: Promote a culture that encourages digital transformation by aligning leadership with frontline requirements.

Reward and recognize digital capability through performance evaluations and certification. By mitigating these factors, healthcare facilities—most especially those in semi-urban or resource-limited environments—can make great improvements in EHR implementation success. Empowering nurses, ultimately, by way of training, participation.

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