

Nurses` Perception Of Electronic Health Records (Ehr) Usability: A Pathway To Improved Patient Outcomes.

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Abstract

Introduction

The fast digitization of health care through Electronic Health Records (EHR) is intended to improve administrative efficiency, patient safety, and documentation quality. Yet its successful implementation depends on the perception and technological readiness of the nurses who use this tool. This paper explores nurses' perceptions regarding the usability of EHR and the barriers to its use in a tertiary care hospital in Lahore, Pakistan.

Methodology

A quantitative, descriptive, cross-sectional research design was used, with a structured questionnaire adjusted to suit the Pakistani healthcare scenario. The study population

consisted of 80 nurses chosen by simple random sampling. SPSS version 27 was used to analyze the data using descriptive statistics.

Results

The results showed a relatively younger (76.3% aged 24–29) and highly female-dominated (82.5%) population, with a moderate level of EHR acceptance (average score 32.5/60). Although 50% of the study subjects believed EHR increases patient satisfaction, only 38.8% were consistent users of the technology. Key barriers to implementation included the absence of proper EHR training (58.8% untrained), technical problems (37.5%), and a lack of leadership support (25%). Only 36.3% of nurses found electronic documentation easier than paper-based methods.

Conclusion

The study reveals that although nurses understand the positive impact of EHR on patient well-being, a considerable “usability gap” exists because of inherent shortcomings. To facilitate EHR adoption, organizations must make efforts toward providing proper training and technical support to nurses.

Introduction

Background

This research looks at how the work of nurses in a tertiary hospital is influenced by Electronic Health Records (EHRs). EHRs are systems that aim to improve the quality of healthcare services delivered, administrative efficiency, and patient care; however, challenges may arise when using EHRs in some situations. To find out what needs to be done, this research focuses on the views and experiences of nurses regarding the use of EHRs. The findings help in developing strategies for utilizing EHRs effectively, improving the work of both nurses and patients. By helping to create efficient EMR deployment plans, this study aims to improve healthcare delivery across a variety of contexts. Implementing EHRs well can improve communication, lower errors, and improve patient safety, and the study emphasizes the necessity of customized strategies for EMR adoption that take into account the unique requirements of healthcare environments.

A related qualitative investigation of twenty registered perioperative nurses working at a large metropolitan health facility in Victoria, Australia, explored opinions and experiences following the implementation of an electronic medical record system in the operating room. Five in-person semi-structured focus groups were conducted in January and February 2024, audio recorded, transcribed verbatim, and analyzed using the Braun and Clarke (2022) thematic-analysis framework. Four main themes emerged: Adapting to Electronic Medical Records, User Experience, Electronic Medical Record

Design, and Patient Care Delivery. Participants' reactions to the EMR installation in the operating room were mixed (Kate Mitchell, Tarryn Armour, 2026).

EHR systems are essential for boosting administrative effectiveness, increasing patient outcomes, and improving healthcare delivery. With many benefits over traditional paper-based record-keeping, EHRs have become an essential part of contemporary healthcare, increasing the accuracy of patient data and facilitating professional communication. EHR systems have been extensively used in developed nations, improving operational efficiency and health outcomes.

Nevertheless, due to various institutional and contextual factors, EHR adoption remains inadequate in low-to-middle income countries such as Nigeria. The perceptions of medical practitioners about EMR are very important for the adoption and use of the technology: negative perceptions may lead to resistance and underutilization, whereas positive perceptions lead to adoption and use (Sulyman, Anokwuru, et al., 2026).

Usability factors play a crucial role in the adoption rate of, and satisfaction with, EHR systems. Higher acceptance and effective use can be attained through enhanced user-friendly interfaces and by resolving technical challenges. Although several usability studies have been conducted concerning EHR systems in hospitals and large clinics, comparatively little work has examined usability in smaller clinic settings, where patient volumes, case types, and resources differ (Mia Amor, Naga, et al., 2026).

Despite its potential benefits, the adoption of EMR in many healthcare facilities still faces a number of obstacles, most often including limited inter-unit communication, inadequate ongoing training, and low organizational readiness (Tsai et al., 2020).

The lack of defined change strategies, employee resistance to workflow changes, and poor leadership in driving digital transformation are all significant factors in the failure of EHR deployment; resistance to digital change is one of the main reasons electronic health systems are not adopted successfully (Scholkmann, 2020).

Improving the convenience, accessibility, and quality of nursing documentation enhances patient care outcomes (Gaughan et al., 2022; Jedwab et al.; Kutney-Lee et al., 2019; Ozer et al., 2020).

As the majority of healthcare workers, nurses are among the main end-users of EHRs and have a significant influence on their adoption; however, nurses may become frustrated and dissatisfied if they believe EHR systems are difficult to use (Heponiemi et al., 2021). Understanding how nurses view EHR usability helps improve utilization, which will ultimately improve workflow, job satisfaction, and patient care quality (Winckler, 2021).

Electronic documentation provides accurate and consistent information, with data accessibility that is quicker, more durable, structured, and methodical, which facilitates performance evaluation and reduces the possibility of mistakes in patient care. Optimizing electronic documentation promotes the efficacy and efficiency of nursing care and seeks to raise overall service quality (Solehudin et al., 2024; Hinonaung et al., 2023).

Currently, not all nursing graduates have received training in electronic documentation, and nursing schools have not fully integrated it into their curricula. A strong educational foundation is the first step in preparing nursing graduates for the complexity of workplace needs; nursing schools need to ensure students are prepared and adept at using EMR (Zakiah, 2024).

Nearly all modern hospitals worldwide have adopted EHR systems, and nurses use these systems more frequently than other healthcare professionals in their day-to-day work, notwithstanding the comparatively high cost of setup, additional hardware, and maintenance (Ramoo, Kamaruddin, Nawawi, Che, & Kavitha, 2023).

Problem Statement

Nursing practice has changed dramatically as a result of the rapid adoption of electronic documentation systems in healthcare settings. Although electronic recording is meant to increase productivity, accuracy, and continuity of care, nurses' opinions

about its use remain divided. High patient flow and workload can result in stress and inadequate documentation, frequently restricting the time available for accurate computerized charting. Nurses' confidence in using computerized systems is further affected by technical problems such as inadequate internet connectivity, system faults, and power outages. In addition, many nurses find it hard to maintain records electronically because they do not possess the required computer skills, and concerns about the privacy of information and the loss of information due to technical problems also hinder adoption. This indicates the need for research into nurses' perception of electronic documentation.

Significance of the Study

The findings of this research are significant as they reveal nurses' attitudes towards the use of electronic documentation and the challenges faced in clinical practice. These findings give health administrators an opportunity to recognize inadequacies in training, system infrastructure, and system support. They may also prove useful in enhancing the documentation system to improve patient safety and efficiency, and in guiding the development of targeted training programs to increase nurses' proficiency.

Objectives of the Study

- To assess nurses' perception regarding EHR usability.
- To identify barriers in using EHR systems.
- To determine the effect of training on EHR use.

Research Questions

- What are nurses' perceptions regarding EHR usability?
- Does training improve EHR use?
- What barriers do nurses face while using EHR systems?

Operational Definitions

Perception

The beliefs, attitudes, comprehension, and opinions that people form based on their experiences and information.

Usability

The ease, efficiency, and satisfaction with which nurses use EHR systems.

Electronic Documentation

The process of using computerized documentation or digital systems to capture, store, and retrieve patient-related health information.

Conceptual Definition

“Nurses' perception of electronic documentation” refers to the beliefs, attitudes, comprehension, and opinions of nurses on the application, efficiency, simplicity, safety, and difficulties of electronic documentation in clinical practice.

Operational Definition

In this study, nurses' perceptions of electronic documentation are defined as their responses to a structured questionnaire that gauges their opinions on the system's security and their general satisfaction with it.

Methodology

Study Design

The study design was quantitative, descriptive, cross-sectional study.

Study Setting

The study was conducted in a tertiary care hospital in Lahore, Pakistan. The target population consisted of registered nurses working in that tertiary care hospital.

Study Variables

Independent Variables

- Nurses' demographic characteristics (age, gender, education level, work experience).
- Training in electronic documentation.
- Availability of electronic systems.
- Internet connectivity and technical support.
- Workload and patient flow.

Dependent Variable

The level of perception regarding electronic health records among nurses.

Study Tools

This study utilized two distinct tools for data collection. Tool I (Demographic Form) had two sections: the first collected nurses' demographic information such as age, marital status, and years of experience; the second collected academic information such as qualification and prior training.

Tool II (adapted Electronic Documentation Questionnaire) was originally developed for a descriptive cross-sectional study conducted via a web-based survey among 108 nurses in three Nigerian Navy healthcare facilities in Lagos, using total enumeration sampling. Data were collected using a structured questionnaire via Google Forms and analyzed using SPSS version 26; descriptive statistics summarized demographic characteristics, attitudes, utilization levels, and barriers, while chi-square tests were used to test hypotheses where applicable.

Sample Population and Sample Size

The study population size was calculated with the help of Slovin's formula: $n = N / (1 + N e^2)$, where $N = 100$ and $e = 0.05$. This gives $n = 100 / (1 + 100 \times 0.0025) = 100 / 1.25 = 80$. The final sample size was 80 nurses.

Sampling Technique

Participants were selected using a simple random sampling technique.

Inclusion Criteria

- Bachelor of Science in Nursing (BSN).
- Age 20 or above.
- Gender: female or male.
- Nurses with relevant years of experience.

Exclusion Criteria

- Registered nurses (RNs) with insufficient computer literacy.
- MSN
- BSN graduates who declined participation.
- Nurses who prefer paper-based documentation due to workload and were unwilling to comment on EHR use.

Data Collection

Approval was obtained from Aligarh College of Nursing, Lahore, and from the participating hospital. A random sampling method was used to select participants, and informed consent was obtained prior to data collection, with a guarantee of data privacy.

Data Analysis

SPSS version 27 was used to analyze the data. Categorical variables were summarized using frequencies, percentages, tables, and bar charts. Associations were evaluated using the chi-square test, with $p < 0.05$ regarded as significant.

Ethical Considerations

- The rules and regulations of the ethical committee of Aligarh College of Nursing, Lahore, were adhered to.
- Written informed consent was obtained from all participants.
- Confidentiality of the participants was guaranteed.
- The purpose of the study was explained to all study participants.

- Participants were informed that they had the freedom to withdraw at any time during the study.

Results

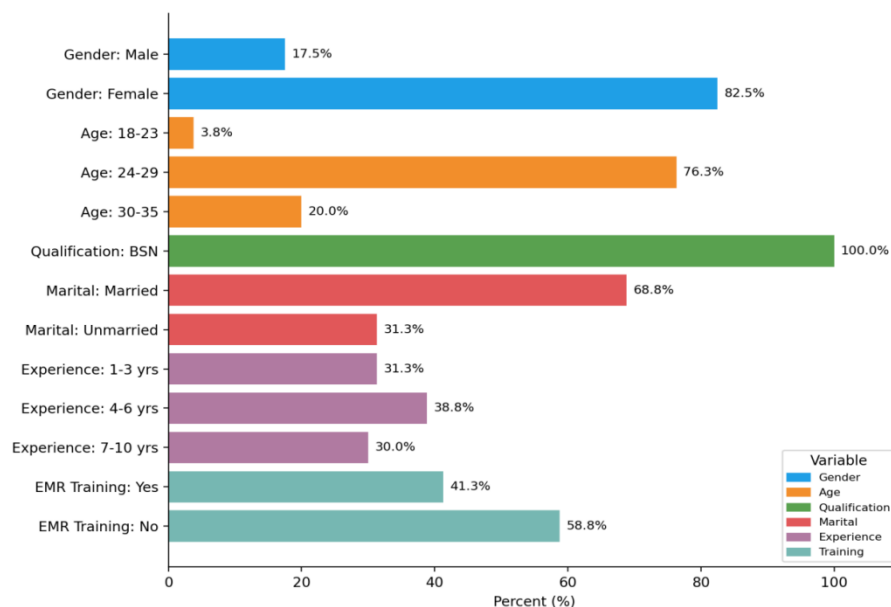
Section 1: Demographic Information

Table 4.1

Variable	Category	Frequency	Percent (%)
Gender	Male	14	17.5
	Female	66	82.5
Age	18-23 years	3	3.8
	24-29 years	61	76.3
	30-35 years	16	20.0
Qualification (BSN only)	BSN	80	100.0
Marital Status	Married	55	68.8
	Unmarried	25	31.3
Experience	1-3 years	25	31.3
	4-6 years	31	38.8
	7-10 years	24	30.0
EMR Training	Yes (trained)	33	41.3
	No (not trained)	47	58.8

Interpretation

Taken together, the demographic profile of the 80 nurses sampled is predominantly young and female: 82.5% of respondents were female, and 76.3% fell within the 24–29-year age bracket, with a mean gender score of 1.82 ± 0.38 . The entire sample of 80 nurses (100%) held a Bachelor of Science in Nursing (BSN) qualification — the Master of Science in Nursing (MSN) and General Nursing/Diploma categories have been excluded from this reporting per the current scope, with the full sample reported as BSN. The majority of participants (68.8%) were married, with an average marital-status score of 1.31 ± 0.46 , and most had moderate working experience: 38.8% had 4–6 years, 31.3% had 1–3 years, and 30% had 7–10 years. Notably, 58.8% of respondents had not undergone any formal EMR training, compared to 41.3% who had, with an average of 1.59 ± 0.49 , indicating an overall lack of formal EMR training experience. In summary, the workforce sampled is a young, female, married, entirely BSN-qualified group with moderate experience but limited formal preparation for EMR use.

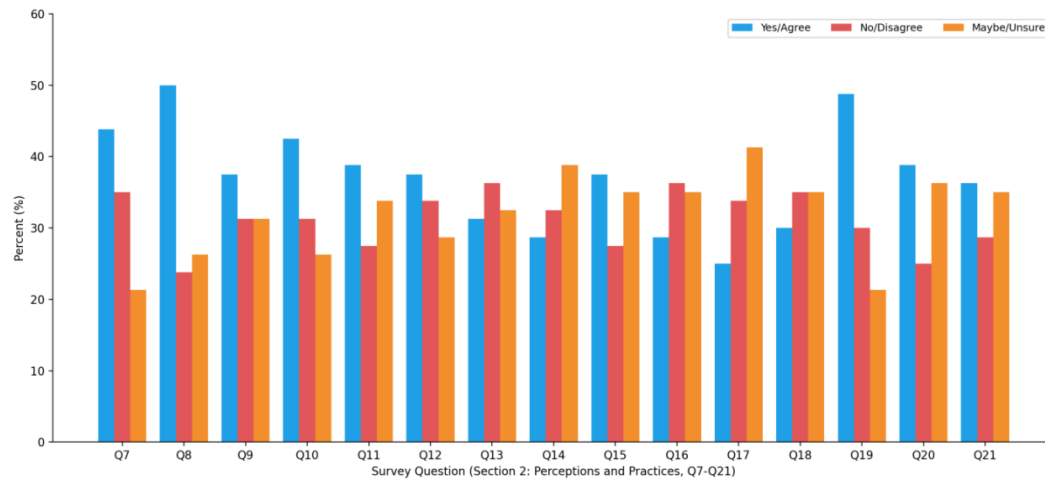


Section 2: Perceptions and Practices Regarding EMR

Table 4.2

Q#	Item	Yes/Agree %	No/Disagree %	Maybe/Unsure %
Q7	EMRs reduce medical errors	43.8	35.0	21.3
Q8	EMR usage improves patient satisfaction	50.0	23.8	26.3
Q9	Frequent technical difficulties using EMR	37.5	31.3	31.3
Q10	Dedicated team for EMR technical support	42.5	31.3	26.3
Q11	EMR used in daily routine	38.8	27.5	33.8
Q12	Proportion of work involves EMR usage	37.5	33.8	28.7
Q13	EMR improves communication among staff	31.3	36.3	32.5
Q14	EMR user interface is in-built/adequate	28.7	32.5	38.8
Q15	Sufficient training provided for EMR usage	37.5	27.5	35.0
Q16	Workload affects ability to use EMR effectively	28.7	36.3	35.0
Q17	Leadership support is adequate for EMR usage	25.0	33.8	41.3
Q18	Resistance from other staff toward EMR adoption	30.0	35.0	35.0
Q19	Incentives are provided for using EMR	48.8	30.0	21.3
Q20	Peer support impacts confidence in using EMR	38.8	25.0	36.3
Q21	EMRs make patient documentation easier	36.3	28.7	35.0

Chart



Interpretation

Across the 15 items on nurses' perceptions and practices regarding EMR, responses were consistently split roughly into thirds between agreement, disagreement, and uncertainty, reflecting a moderate and mixed overall perception. A large proportion of participants (43.8%) believed EMRs help minimize medical errors, and fully half (50.0%) felt EMR usage improves patient satisfaction, yet only 38.8% reported using EMRs regularly in their daily routine and only 37.5% felt their work substantially involves EMR usage. Technical difficulties were common: 37.5% reported frequent technical problems, while only 42.5% felt dedicated technical support was available. Perceptions of the system's design and support infrastructure were similarly moderate — only 28.7% felt the user interface was adequate, only 37.5% felt training was sufficient, and only 25.0% felt leadership support was adequate, the lowest agreement figure among all items. Workload (28.7%) and peer resistance (30.0%) were also identified as constraints, while peer support was seen as a positive influence on confidence by 38.8% of respondents. Incentives for EMR use were the most positively rated item, endorsed by 48.8% of participants, and 36.3% felt EMRs make patient documentation easier overall. Collectively, these results indicate that while nurses recognize EMR's potential benefits for safety, satisfaction, and documentation, adoption is held back by gaps in training, technical support, interface usability, and organizational leadership.

Section 3: Overall Summary Statistics

Demographic Scale

From the findings, it is clear that the majority of participants were female ($M = 1.82 \pm 0.38$) and fell within a relatively young age group ($M = 2.16 \pm 0.46$). Education level showed a majority BSN qualification. Most participants were married ($M = 1.31 \pm 0.47$), had relatively good working experience ($M = 1.99 \pm 0.79$), and were not adequately trained in using EMR ($M = 1.59 \pm 0.50$). In general, the participants were young women nurses with moderate experience.

Table 4.3

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Gender of respondents	80	1.00	2.00	1.8250	.38236	.146
Age in years	80	1.00	3.00	2.1625	.46235	.214
Qualification	80	1.00	3.00	1.6250	.81714	.668
Marital status of respondents	80	1.00	2.00	1.3125	.46644	.218
Experience in Years	80	1.00	3.00	1.9875	.78746	.620
Any Formal Training on EMR	80	1.00	2.00	1.5875	.49539	.245
Valid N (listwise)	80					

Mean Perception Level of Nurses Regarding the EMR System

The total score mean value was 29.23 ± 3.09 , showing that respondents had a moderate to good general level of perception. Scores ranged from 19 to 39, and the relatively small standard deviation shows that most answers are close to the mean. All 80 responses were valid and analyzed. The results demonstrate a positive attitude towards adopting EMR, although the noted variability reflects differing levels of experience among nursing staff.

Table 4.4

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Total Score	80	19.00	39.00	29.2250	3.09747
Valid N (listwise)	80				

Test Statistics

Descriptive statistics were used to assess perceptions and practices regarding EMR among respondents. The average score was 29.23, with a standard deviation of 3.09, representing a moderate to relatively good score among subjects. The lowest and highest scores obtained were 19 and 39, respectively.

Table 4.5

Variable	Statistical Test	N	Mean $\pm$ SD	Minimum	maximum
Perception Level (Total Score)	Descriptive Statistics	80	29.23 ± 3.09	19	39

Discussion

Demographic Influence and Professional Qualifications

There was a dominance of women in the sample (82.5%), coupled with a very young workforce, since 76.3% were between 24 and 29 years old. These demographics align with Riaz & Nazir (2022), whose nursing participants were also mostly female and relatively young. While younger employees may find it easier to adopt new technology, effective utilization still depends on training.

With respect to education, the majority of the whole sample held a Bachelor of Science in Nursing (BSN) qualification (58.8%), implying a skilled workforce; this is consistent with Zakiyah (2024), who found that better-educated nurses generally report higher perceived usefulness of electronic documentation. However, professional

qualification alone did not indicate technological preparedness in this study, since a majority of participants had not undergone EMR training – a finding consistent with Sulyman et al. (2025), who identified inadequate training (43.4%) as a major barrier to effective EMR use.

Perceptions of Safety and Patient Outcomes

Only 43.8% of the sample believed EMRs help reduce medical errors, notably lower than the results reported by Ramoo et al. (2023), where most nurses viewed EHRs as vital to improved patient safety. While half of respondents believed EMRs increase patient satisfaction, other studies show much stronger correlations between electronic documentation and quality of care. This gap suggests nurses in this tertiary hospital have not yet experienced the full benefits of the system, likely reflecting limited experience with it.

Technical Barriers and Usability Challenges

Technical issues were a major concern, with 37.5% of participants frequently encountering problems and only 42.5% reporting adequate technical support; these figures are broadly comparable to the 46.1% reported by Sulyman et al. (2025). As noted by Mia Amor et al. (2026), poor usability and inefficient interface design impede health professionals' ability to record patient information; this is reflected in the current study, where only 36.3% of nurses felt EMR technology makes documentation easier, contrary to the more positive findings of Hinonaung et al. (2023) and Solehudin et al. (2024).

Utilization and Workflow Integration

The reported usage rate was relatively moderate, with only 38.8% of nurses using the system regularly – well below the 84.2% utilization reported by Sulyman et al. (2025) and 99.8% by Illyas et al. (2025). This suggests EMR has not yet been fully embedded into routine workflows or enforced by hospital policy. Only 31.3% of participants reported that EMRs improved communication between staff, which contradicts Gaughan et al. (2022), who found that digital systems typically improve data access and care coordination.

Organizational Support and Resistance

Organizational readiness was identified as a key gap: only 25% felt they had adequate leadership support, and only 37.5% felt sufficiently trained. As Javeed (2023) notes, organizational readiness is the bedrock of implementation success, and Hussain et al. (2025) found it significantly influences perceived ease of use.

Resistance to change was another identified factor: 28.7% of participants felt increased workload affects their EHR use, consistent with Mehrali and Nisa (2023), who found nurses perceive digital documentation as time-consuming.

Conclusion

It can be concluded that nurses in tertiary healthcare facilities in Lahore show a medium level of EHR acceptance and adoption, with an average score across all 21 survey items of 32.5 out of 60 (54.1%). Despite awareness of EHR benefits in enhancing care quality (51.3%) and increasing patient satisfaction (50.0%), the transition to EHR use is hampered by system shortcomings.

Major barriers included a serious lack of training (58.8% untrained), technological problems (37.5%), and inadequate support from hospital leadership (25.0%). The resulting “usability gap” is a key barrier, as only 36.3% of nurses found digital documentation easier than paper. To move beyond this moderate stage of adoption, institutions need to go beyond software installation alone and focus on user-centered training and technological reliability.

Limitations

The following limitations should be considered when interpreting the findings of this study:

- Geographical and institutional setting: The study was conducted in a single tertiary care hospital in Lahore; results cannot be generalized to primary/secondary care settings or to hospitals in other regions of Pakistan.
- Sample size: The study included 80 respondents, a relatively small sample.
- Social desirability bias: Data were collected through self-reporting questionnaires, which are prone to social desirability bias; nurses may have reported more favorable attitudes than they hold, or understated resistance.
- Cross-sectional design: The study is a “snapshot”; changes in perception as EHR systems and institutional policies evolve cannot be captured by a cross-sectional design.
- Nursing focus only: Only nurses were considered in this research, although system use spans multiple disciplines; the views of physicians, pharmacists, and administrators, whose interaction with the system affects nursing practice, were not captured.

Recommendations

In light of the results, the following recommendations are made to improve EHR integration and efficacy:

1. Leadership and Institutional Support

- Engagement of leaders: Hospital management should demonstrate support for the EHR system by including nurses in decisions related to updating and designing the EHR interface.
- Technology infrastructure: Focus should be placed on maintaining stable internet connectivity and an appropriate staff-to-hardware ratio to avoid bottlenecks in documentation.

2. Educational and Training Initiatives

- Mandatory training: Comprehensive, practical training programs should be established for newly recruited nurses and for refreshing existing staff, given the 58.8% shortage of training identified.
- Curriculum integration: Nursing education institutions should incorporate electronic documentation and health informatics into their core BSN curricula.

3. EHR Usability and Feedback

- User-centered design: IT vendors should collaborate to make the EHR interface more user-friendly by reducing the number of clicks needed for any task.
- Feedback loops: An official process should be created through which nurses can raise technical or usability issues and receive updates on their resolution.

4. Incentives and Motivation

- Recognition program: Create incentives, whether professional recognition or performance-based rewards, to motivate nurses to use the system and document digitally.
- Support unit: Establish “Super-User” or EHR champion roles in each ward to assist other nurses on the floor.

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