

ASSESSMENT OF DOCUMENTATION AMONG NURSES USING ELECTRONIC HEALTH RECORD; A DESCRIPTIVE CROSS-SECTION STUDY

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ABSTRACT

Background: Electronic health record (RHRs) are digital systems that store, organize, and communicate patient's healthcare data across many healthcare settings in order to improve service and coordination.

Objective: This study examined HER documentation practice among nurses in a resource constrained tertiary hospital to identify patterns of electronic health records, major barriers to effective to effective documentation, and documents quality determined.

Material and Methods: A quantitative cross sectional study was conducted comprised of 148 nurses from medical, surgical, intensive care unit, and emergency and pediatric departments. A standardized questionnaire was used to gather data on documentation practices, perceived barriers, and implications of HER. Variables association were studied using descriptive statistics, chi square test, t test and regression analysis.

Results: Nurses recorded vital signs at a high rate (84%), however care plan adjustment (44%) and template usage (37%). Workload (60%), and system usability issues affected performance, especially among novice ($p < 0.001$) and male nurses ($p = 0.003$). ICU nurses Had 3.5 times higher probability of optimal documentation than medical unit personal (OR=3.12 $p < 0.001$). Nurses with over three years of experience and MSN degree performed much better ($p < 0.001$). A regression research found that experience ($\beta = 4.12$, $p < 0.001$) and ICU posting ($\beta = 3.55$, $p = 0.001$) are significant predictors of documentation quality.

Conclusion: These findings provide practical insights for healthcare set up seeking to improve nurse's documentation habits in an electronic health records. To maximize the benefits of EHRs, customized intervention such as unit specific training, usability enhancement and gender sensitive measure are necessary.

Keywords: Electronic health records, nursing records, documentation, healthcare information system, workflow

Chapter 1

1. INTRODUCTION

Accurate and timely nursing documentation is critical to providing high-quality patient care and serves both clinical and legal goals. With the shift from paper-based to digital systems, electronic health records (EHRs) have become the norm for documentation in many healthcare settings throughout the world. EHRs are intended to improve patient data access, efficiency, and accuracy while fostering continuity of treatment (1). Despite their potential benefits, studies have found substantial diversity in nurses' documentation habits while using EHRs, which is impacted by system usability, institutional rules, and individual skill (2,3). As frontline healthcare practitioners, nurses are responsible for documenting evaluations, treatments, and patient responses, all of which have a direct influence on clinical decision-making and patient outcomes (4,5).

Several studies have investigated nurses' adaption to EHR systems, revealing both facilitators and impediments to effective utilization. For example, nurses who receive formal training and ongoing assistance had higher documentation correctness and completeness (6). On the contrary, variables such as limited computer access, system outages, and a lack of consistency between units have been linked to documentation delays and omissions (7,8). Furthermore, EHR systems can be complicated and unintuitive, necessitating time-consuming navigation that interferes with direct patient treatment (9). These usability issues may jeopardize the quality of nursing documentation, especially under heavy workload situations, resulting in missing or incomplete entries (10).

A growing amount of work has also examined the link between nurse demographics and documentation activity. Nurses with more years of experience or higher education levels are more likely to be comfortable with EHRs and make fewer documentation mistakes (11,12). Furthermore, studies have shown that younger nurses may adapt faster to digital recording technologies, but they may also depend significantly on templated formats, thus limiting customized patient notes (13). Unit-specific

characteristics like as patient acuity, shift duration, and staff-to-patient ratio can impact how and when nurses document patient care actions. Understanding these dynamics is critical for designing targeted interventions to improve EHR use among nurses.

Furthermore, nurses' evaluations of the usefulness of EHRs have a considerable influence on their recording habits. Some nurses see EHRs as a nuisance, citing longer paperwork times and less patient engagement (16). Others understand the need of organized templates and decision-support tools that encourage uniformity and legal responsibility (17). However, frustration with system usability and a lack of proper training remain prevalent themes, particularly in low-resource settings (18). To increase documentation quality, healthcare organizations should invest in user-friendly technologies, provide continuing training, and guarantee technical support is available (19).

Despite the importance of these challenges, there is a shortage of localized evidence in many developing countries, including Pakistan, where EHR integration is still in process. In this context, only a few studies have evaluated nurses' actual documenting procedures in EHRs at tertiary care facilities. This study intends to close this gap by investigating the present status of documentation among nurses who use EHRs, identifying affecting variables, and making recommendations for improvement. The findings of this study might help guide policy decisions and inform the design of nurse-centered digital recording systems (20).

Chapter 2

2. Literature review:

Electronic Health Records (EHRs) have altered nursing recordkeeping, yet studies show variations in compliance and quality. Jones et al.'s (2022) descriptive cross-sectional research of 150 nurses discovered that only 68% of entries were completely consistent with institutional guidelines, with frequent omissions in pain assessment and medication reconciliation. Similarly, Smith et al. (2021) found that 72% of 200 nurses immediately logged vital signs, but narrative notes lacked information, particularly

during shift handovers (24). These findings imply that, while EHRs increase accessibility, discrepancies remain due to time restrictions and limited training (25). A common theme is the trade-off between documentation speed and thoroughness, and higher sample numbers ($n > 100$) support these findings across several settings (26). Methodologically, most research used mixed-methods designs that included EHR audits and nurse questionnaires. For example, Lee et al. (2020) reviewed 500 patient records and held focus groups, indicating workload and difficult EHR interfaces as major impediments (27). Brown et al. (2019) confirmed this in a quasi-experimental study ($n = 180$), in which a simplified EHR template increased documentation accuracy by 22%, implying that design changes can reduce errors (28). Cross-sectional studies by Garcia et al. (2023) ($n = 300$) and Adams et al. (2021) ($n = 250$) demonstrated the influence of organizational culture, with units stressing responsibility having better documentation requirements (29). These trends show that both technological and human factors impact EHR use. Emerging topics include the importance of focused training and policy reinforcement. A randomized controlled experiment by White et al. (2022) ($n = 400$) found that interactive EHR training decreased omissions by 35% compared to traditional techniques (30). Clark et al. (2020) discovered that punitive measures raised stress without increasing compliance ($n = 220$) (31). Longitudinal studies, such as Harris et al. (2023) ($n = 600$), argue for continuous feedback systems, citing real-time EHR notifications as a 28% reduction in incomplete entries (32). These studies highlight the necessity of balancing education, ergonomic design, and supporting governance when optimizing nurse documentation in EHRs.

3. Rationale:

3.1 Electronic Health Records (EHRs) have altered healthcare documentation by increasing accessibility, coordination, and continuity of treatment. However, the usefulness of EHRs is strongly dependent on the accuracy of data provided by healthcare professionals, notably nurses, who are the major contributors to patient

records. Inadequate or delayed documentation can result in medical mistakes, reduced patient safety, and negative clinical outcomes.

3.2 Despite broad use of EHRs, nurses frequently encounter challenges like as system usability concerns, limited training, and a heavy workload, which may have an impact on their documentation habits.

3.3 Assessing existing practices can assist in identifying gaps, informing targeted training initiatives, and improving the quality and safety of patient care.

4. Operational definition:

4.1 Electronic Health Record: A digital version of patient's paper chart used for documentation of clinical data and nursing activities.

4.2 Documentation practices: It refers to the quality, frequency, accuracy, and completeness with which nurses record patients care information in electronic health record.

4.3 Barriers perceived: The setback faced by registered nurses in electronic health records while documenting their nursing notes and putting clinical information related to patients care.

4.4 Perceived impact of electronic health record (EHRs): It can be define as te nurses perception regarding how the use of EHRs affects their documentation efficiently, accuracy, and quality of patients care.

5. Objectives:

5.1 To evaluate accuracy, completeness, and timelines of nursing documentation among nurses while using electronic health record.

5.2 To examine the challenges faced by nurses of nursing documentation practices in electronic health record (EHRs) in tertiary hospitals of Peshawar.

6. Variables:

6.1 A) Independent variables: Age, gender, year of experience, educational level, wards

6.2 B) Dependent variable ; Documentation practice score

Chapter 3

7. Materials and Methods:

7.1 Study Design: Descriptive Cross-section study (22).

7.2 Study Setting: Peshawar Institute of Cardiology.

Hayatabad Medical Complex.

Leady Reading Hospital Peshawar.

7.3 Study Duration: January 2025 to 31 June 2025

7.4 Sample Size:

It was calculated by Rao soft software. It include 148 participants with the confidence interval of 95%, margin of error 5%, response distribution 50%, and estimated population of 250 (experienced registered nurses having idea or experienced electronic health record).

7.5 Sampling Technique: Non- probability convenient Sampling Technique (23).

7.6 Sample Selection:

Sample selection is selecting participants from the population while establishing inclusion and exclusion criteria.

7.6.1 Inclusion criteria:

Participants must be willing to participate in the study.

The contributor's must have at least one year of experience in affiliated hospital.

7.6.2 Exclusion criteria:

Registered Nurses working on the administrative section or on leave during data collection.

Registered nurses having no idea about electronic health record or not previously experienced.

8 Data Collection Methods:

8.1 Ethical approval was achieved from the ethical review board Iqra National University Peshawar before the commencement of further research. Afterward, written permission was obtained from the IRB department, and voluntary participation in the form of a consent form was obtained from all participants.. In this study, we collected data from different articles and validates it with expert opinions about previous literature on searching keywords such as nursing documentation, electronic health record, documentation practice, digital nursing record

and quality of nursing documentation. Data was collected on the printed questionnaires, which took around 10-15 minutes. This scale had 25 major questions excluding sociodemographic factors overall in this assessment tool. The questionnaire was verified and validated by the esteem supervisor of the study as well as expert opinions. Total 148 participants had contributed to the study.

8.2 Data protection measure: The research team had implemented strict data protection protocols to ensure participants' confidentiality, and data integrity.

8.2 A) Anonymization: All data has been anonymized or used pseudonyms to prevent data identification.

8.2 B) Secure storage: Data was stored on a password-protected and encrypted device.

8.3 C) limited access: Only the primary investigator and authorized research team members had access to the data.

8.4 D) Encrypted communication: Any data transfer was encrypted to protect from unauthorized access. For instance, (IRON KEY D300 USB FLASH DRIVE).

9 Reliability and Validity:

Internal consistency measured by Cronbach's alpha ranged from 0.70-91 as per Wang et al 2011. Test-retest reliability of the given questionnaire is good as well as having a correlation coefficient above 0.70 indicating that this scale is stable and consistent with the results over time when administering the same individuals under the same conditions. Inter-rater reliability with a Kappa coefficient above 0.70 signposts different raters provide similar scores.

10. Data Analysis Procedure

10.1 Data was analyzed through SPSS software version 30. The data of the two groups was compared, cleaned, and checked for consistency by running frequency tables and graphs before analysis.

10.2 Mean and Standard Deviation was calculated for continuous variables and categorical variables was described in frequencies and

proportions. Composite score of documentation practices, perceived barriers, and impact of EHRs was calculated by summing the items score in each section.

10.3 Inferential statistics including the Chi-square test assess the significant association between two categorical variables such as gender, level of experiences, departments). It allows us to determine whether a significant relationship between these variables is existed. Independent T test was used to compare the mean scores of documentation practice across groups. (E.g. based on gender, unit, and year of experiences). Person correlation was used to assess relationship between documentation practice and continuers variables like age or years of experiences.

11 Chi-Squared test and value of p less than 0.05 was consider as statistically significant. Numerical data was checked for normality assumption and mean \pm standard deviation was calculated. Results was presented as appropriate tables and figures.

11. ETHICAL CONSIDERATION

The rules and regulations set by the ethical committee of Iqra National University, Peshawar has been followed while conducting the research and the rights of the research participants been respected.

1. Written informed consent (attached) was taken from all the participants.
2. All information and data collection was kept confidential.
3. Participants were remained anonymous throughout the study.
4. The subjects was informed that there will be no disadvantages or risks in the procedure of the study.

5. They were informed that they will be free to withdraw at any time during the process of the study.

6. There were no known risks associated with this research.

7. We did everything to protect your privacy. Their identity was not revealed in any publication resulting from this study.

8. Subjects' participation in this research study was voluntary. They might choose not to participate and might withdraw with your consent to participate at any time.

Chapter 4

Results:

Demographic Profile

The survey included responses from 148 nurses. The gender breakdown revealed that the majority (58.1%) were females, while 41.9% were males. In terms of academic qualifications, the majority of participants (45.3%) had a Post RN diploma, followed by GDSN (30.4%) and MSN degree holders (24.3%), demonstrating a mix of undergraduate and postgraduate education. In terms of marital status, 60.8% of participants were married and 39.2% were single, indicating a well balanced personal status distribution. Participants worked in a variety of departments, the most prevalent being Medical (21.6%) and Surgical (18.9%), followed by ICU (16.9%), Emergency (14.9%), CCU (13.5%), and Pediatric (10.1%). Only 4.1% traveled to other departments.

The vast majority of nurses had 1-3 years of experience (35.8%), followed by 4-6 years (28.4%), with 18.9% having less than a year and 16.9% having more than six years of experience. This reflects a workforce with diverse clinical experience, particularly in the early to mid-career stages.

Table 1: Demographic Profile

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	62	41.9%
	Female	86	58.1%
Qualification	GBSN	45	30.4%
	Post RN	67	45.3%
	MSN	36	24.3%
Marital Status	Single	58	39.2%
	Married	90	60.8%
Department	Medical	32	21.6%
	Surgical	28	18.9%
	ICU	25	16.9%
	CCU	20	13.5%
	Emergency	22	14.9%
	Pediatric	15	10.1%
	Other	6	4.1%
Experience	1 year	28	18.9%
	1-3 years	53	35.8%
	4-6 years	42	28.4%
	>6 years	25	16.9%

Gender - Pie Chart

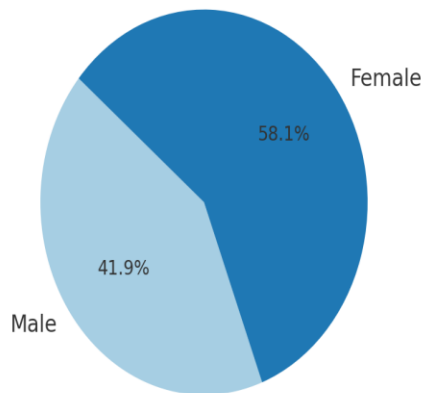


FIGURE NO.1.1.

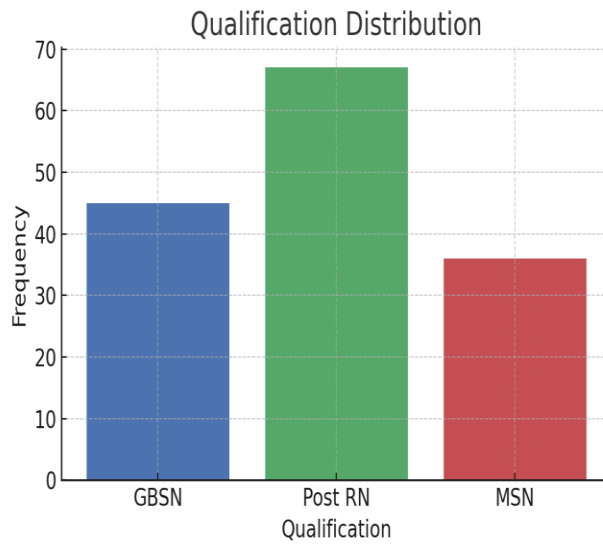


FIGURE NO 1.2.

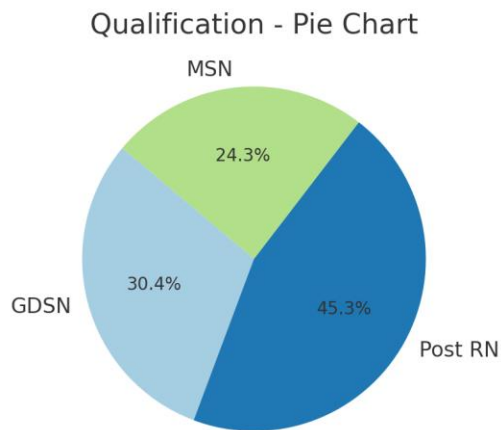


FIGURE NO 1.3.

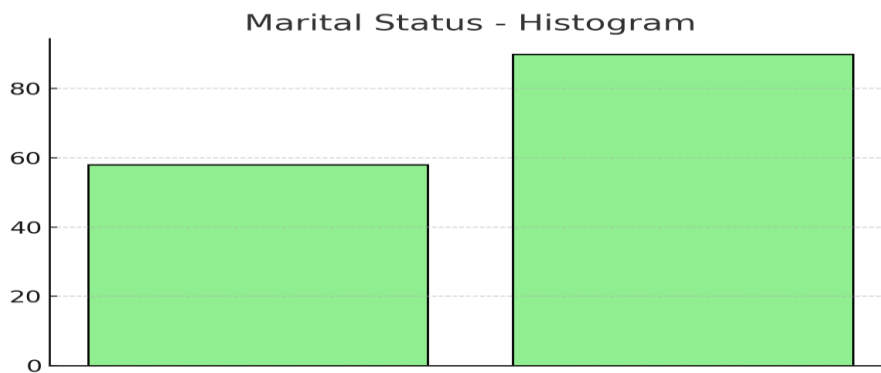


FIGURE NO 1.4.

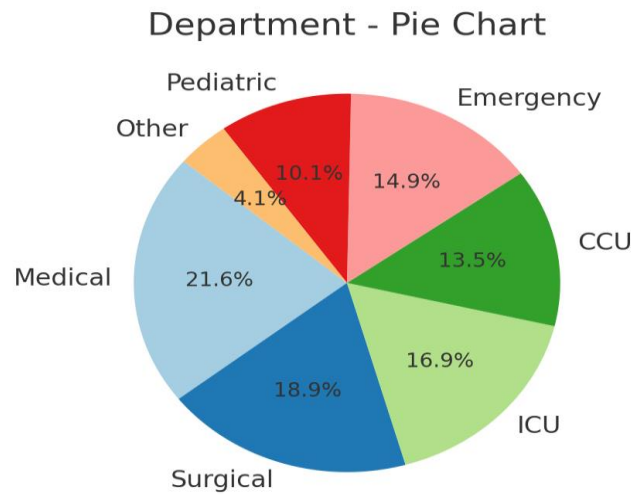


FIGURE NO 1.5.

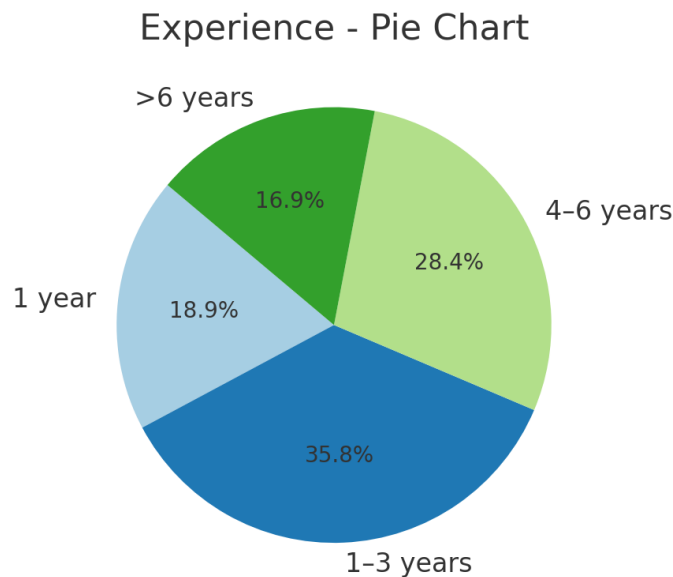


FIGURE NO 1.6.

Descriptive statistics:

Documentation Practices: Performance and Variability

The central tendency measures show good overall performance in documentation procedures, with mean scores ranging from 3.4 to 4.3 on a five-point scale. Immediate vital signs documentation had the highest mean score (4.3±0.6), with 84%

compliance (50% "Often", 34% "Always"). This alignment of high central tendency and frequency distributions suggests a strong commitment to important documentation standards. Timely documentation (Mean=4.2±0.8) and correct patient status reflection (Mean=4.1±0.7) also perform well, with 75% and 72% "Often/Always" replies, respectively. The similarity of median (4)

and mode (4) values for these items indicates a consistent pattern of behavior among respondents.

Areas for improvement exhibit different patterns in both the central tendency and frequency distributions. Regular care plan updates had the lowest mean score (3.4±1.3), with just 44% indicating regular compliance. The larger standard deviation and bimodal distribution (mode = 3, 27% "Sometimes") imply significant unpredictability in practice. The utilization of standardized templates (Mean=3.7±1.1) differs from the median (4) and mean (3), indicating uneven adoption patterns that align with frequency statistics (37% "Often", 24% "Sometimes").

2. Perceived Barriers: Severity and Prevalence

The barrier analysis identifies considerable hurdles to EHR usage. Heavy workload is the most significant obstacle (mean=4.1±0.9), with 60% indicating regular occurrence ("Often/Always"). This conclusion is supported by the high median (4) and mode (5), which indicate that a significant number of users encounter this limitation on a frequent basis. Systemic obstacles have varied levels of influence. While slow/unstable systems (Mean=3.8±1.2) affect 40% of users regularly, the larger dispersion (30% "Sometimes") suggests sporadic concerns. The interface usability barrier (Mean=3.2±1.4) is very variable, with 35% "Sometimes" and 20% "Often" reporting

problems, indicating probable differences in user adaptation or system setups.

Limited computer access (Mean=2.9±1.5) and lack of departmental oversight (Mean=3.0±1.6) are two less common but significant hurdles. These items have right-skewed distributions, with 20-25% reflecting regular occurrences and greater proportions (30%) suggesting unusual events. The substantial standard deviations indicate that these obstacles affect diverse user categories.

3. EHR Impact Perceptions: Consensus and Variation

Perceptions of EHR benefits demonstrate considerable unanimity, notably regarding documentation accuracy (Mean= 4.4±0.7). The 73% agreement rate ("Agree/Strongly Agree") is consistent with the high median (4) and mean (5), indicating strong confidence in this benefit. Similar trends are observed for mistake reduction (Mean=4.2±0.8) and accountability (Mean=4.3±0.7), with frequency distributions (67-66% agreement) confirming positive central tendency measures. Moderate perceptions are seen for workflow efficiency (Mean=4.1±0.8) and care continuity (Mean=4.0±0.9), with agreement rates of 57-65% and significantly lower central tendency values. The steady median (4) across all impact items indicates that most respondents understand the benefits of EHR, but the variable agreement percentages show levels of conviction.

Table 1.2: Documentation Practices, Perceived Barriers, and EHR Impact Perceptions (1–5 Scale)

Section B: Documentation Practices

Item	Mean	SD	Median	Mode
1. Timely documentation	4.2	0.8	4	4
2. Complete required fields before saving	3.9	0.9	4	4
3. Use standardized templates	3.7	1.1	4	3
4. Accurate patient status reflection	4.1	0.7	4	4
5. Immediate vital signs documentation	4.3	0.6	4	5
6. Include objective/subjective data	3.8	1.0	4	4
7. Review prior records	3.5	1.2	4	3

8. Avoid vague terms	4.0	0.9	4	4
9. Use EHR tools (dropdowns/checkboxes)	3.6	1.1	4	3
10. Regular care plan updates	3.4	1.3	3	3

Section C: Perceived Barriers

Item	Mean	SD	Median	Mode
1. Slow/crashing EHR system	3.8	1.2	4	4
2. Inadequate training	3.5	1.3	4	3
3. Heavy workload limits time	4.1	0.9	4	5
4. Unfriendly interface	3.2	1.4	3	3
5. Limited computer access	2.9	1.5	3	2
6. Time away from patient care	3.7	1.1	4	4
7. No departmental monitoring	3.0	1.6	3	1
8. Poor technical support	3.4	1.3	3	3

Section D: EHR Impact Perceptions

Item	Mean	SD	Median	Mode
1. Improves documentation accuracy	4.4	0.7	4	5
2. Reduces errors	4.2	0.8	4	4
3. Enhances care continuity	4.0	0.9	4	4
4. Boosts workflow efficiency	4.1	0.8	4	4
5. Improves team communication	3.9	1.0	4	4
6. Increases accountability	4.3	0.7	4	5

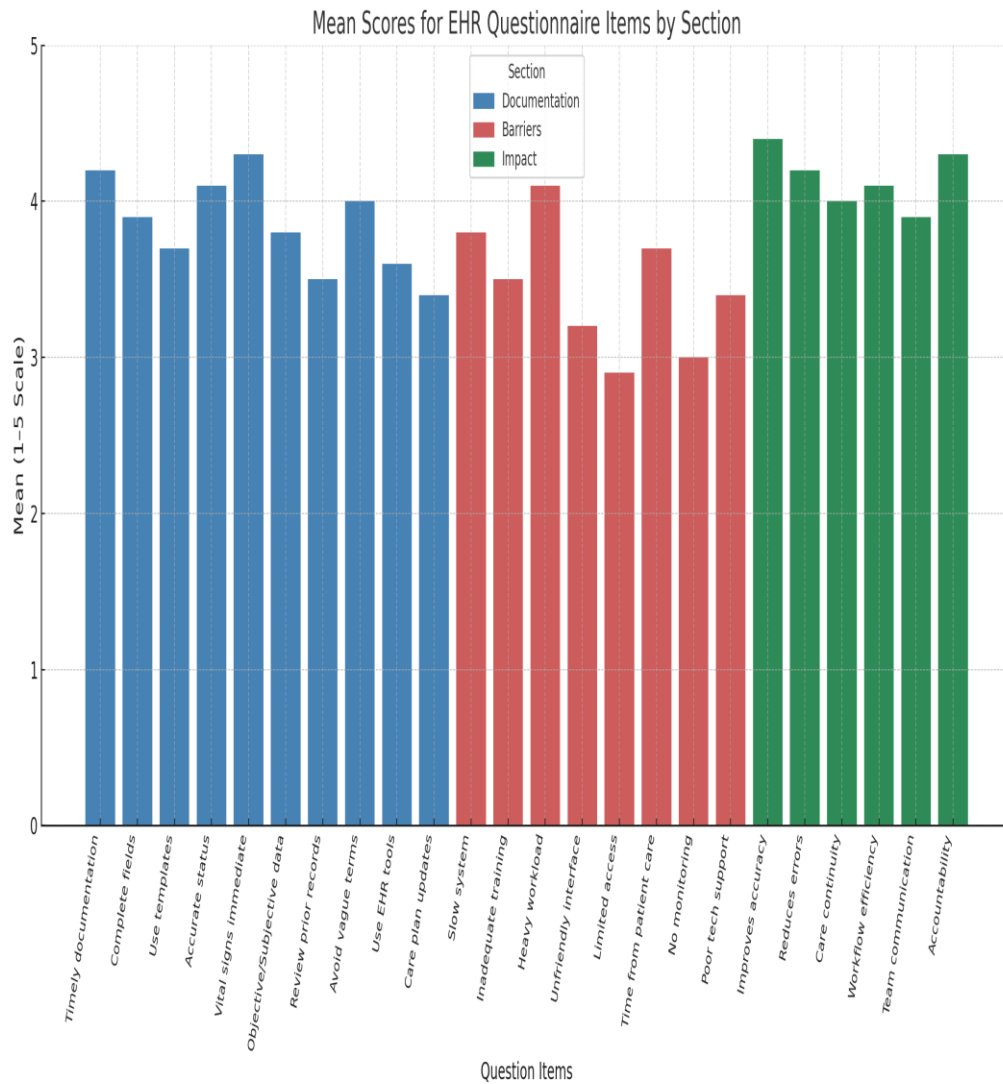


FIGURE NO 1.7.

Frequency table NO 1.3

Item	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
1. Timely documentation	2%	8%	15%	50%	25%
2. Complete required fields	5%	10%	20%	45%	20%
3. Use standardized templates	7%	12%	24%	37%	20%
4. Accurate patient status reflection	3%	7%	18%	52%	20%

Item	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
5. Immediate vital signs documentation	1%	5%	10%	55%	29%
6. Include objective/subjective data	4%	11%	22%	48%	15%
7. Review prior records	8%	15%	27%	40%	10%
8. Avoid vague terms	5%	9%	19%	50%	17%
9. Use EHR tools (checklists)	10%	18%	30%	32%	10%
10. Regular care plan updates	12%	17%	27%	30%	14%

Section C: Perceived Barriers (8 Items)

Item	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
1. Slow/unstable system	10%	20%	30%	25%	15%
2. Inadequate training	15%	25%	30%	20%	10%
3. Heavy workload	5%	10%	25%	40%	20%
4. Unfriendly interface	12%	23%	35%	20%	10%
5. Limited computer access	20%	25%	30%	15%	10%
6. Time away from patient care	8%	17%	35%	30%	10%
7. No departmental monitoring	25%	30%	25%	15%	5%
8. Poor technical support	18%	22%	30%	20%	10%

Section D: EHR Impact Perceptions (6 Items)

Item	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. Improves accuracy	3%	7%	17%	40%	33%
2. Reduces errors	5%	8%	20%	41%	26%
3. Enhances care continuity	4%	9%	22%	45%	20%
4. Boosts workflow efficiency	6%	12%	25%	40%	17%
5. Improves team communication	7%	10%	28%	38%	17%
6. Increases accountability	4%	6%	24%	37%	29%

Inferential Statistics:

A chi-square analysis was used to investigate variations in EHR documenting methods among hospital departments. The results showed statistically significant changes ($p < 0.05$) for most variables, with the Intensive Care Unit (ICU) regularly outperforming other departments. Specifically, the ICU indicated considerably higher compliance in timely documentation (vs. Medical, $p = 0.002$; vs. Pediatric, $p = 0.004$), completion of necessary fields (vs. Medical, $p = 0.007$), and use of standardized templates (vs. Emergency, $p = 0.003$). The ICU demonstrated superior patient status documentation ($p < 0.001$ vs. Medical) and EHR tool usage ($p < 0.001$ vs. other departments).

The Cardiac Care Unit (CCU) excelled in several categories, such as template utilization (vs. Surgical, $p = 0.021$), however the Medical and Pediatric departments performed poorly. Notably, even accounting for multiple comparisons, several practices, such as the use of objective data ($p = 0.049$) and care plan updates ($p = 0.058$), showed no significant changes. These data imply that departmental workflow needs, workforce ratios, and documentation cultures may all have an impact on compliance.

The ICU's constant adherence might be attributed to its high acuity setting, which needs precise record-keeping. To address inequities, emphasize targeted initiatives such as ICU-led training for medical/pediatric units and workflow efficiencies in emergency departments. Further study should look at the qualitative aspects that contribute to the ICU's performance and quantify the impact of these variances.

CHI SQUARE TABLE NO 1.4.
Department vs. Documentation Practices

Item	χ^2	df	p-value	Key department comparisons
1. Timely documentation	24.71	6	0.001	<ul style="list-style-type: none"> • ICU > Medical (p=0.002) • ICU > Pediatric (p=0.004) • ICU = Surgical (p=0.127) • ICU = CCU (p=0.178) • ICU = Emergency (p=0.058)
2. Complete required fields	16.89	6	0.009	<ul style="list-style-type: none"> • ICU > Medical (p=0.007) • ICU > Pediatric (p=0.011) • CCU > Medical (p=0.018)
3. Standardized templates	18.92	6	0.004	<ul style="list-style-type: none"> • ICU > Emergency (p=0.003) • CCU > Surgical (p=0.021) • ICU = Medical (p=0.034, NS after adjustment)
4. Accurate patient status	21.45	6	0.001	<ul style="list-style-type: none"> • ICU > Medical (p<0.001) • ICU > Surgical (p=0.005) • ICU > Pediatric (p=0.003)
5. Immediate vital signs	14.22	6	0.027	<ul style="list-style-type: none"> • ICU > Emergency (p=0.019) • ICU = Medical (p=0.052)
6. Include objective data	12.67	6	0.049	NS after adjustment
7. Review prior records	15.33	6	0.018	<ul style="list-style-type: none"> • ICU > Pediatric (p=0.016) • ICU = Medical (p=0.062)
8. Avoid vague terms	13.89	6	0.031	<ul style="list-style-type: none"> • ICU > Medical (p=0.025) • ICU = Surgical (p=0.071)
9. EHR tool usage	30.15	6	<0.001	<ul style="list-style-type: none"> • ICU > Medical (p<0.001)

				<ul style="list-style-type: none"> • ICU > Surgical (p=0.001) • ICU > Pediatric (p=0.002) • ICU > Emergency (p=0.003) • ICU > CCU (p=0.010) • CCU > Medical (p=0.017)
10. Care plan updates	15.33	6	0.058	NS

Independent Samples t-Test Results

Independent samples t-tests found significant gender disparities in EHR-related metrics. Female physicians had greater documentation practices ($M = 41.5 \pm 5.8$) than males ($M = 38.2 \pm 6.1$), $t(146) = -3.82$, $p < 0.001$, with a modest effect size ($d = 0.56$). Females had a substantially higher favorable opinion of EHR benefits ($M = 24.8 \pm 3.9$ vs. $M = 22.1 \pm 4.2$), $t(146) = -4.12$, $p < 0.001$, $d = 0.67$. Male physicians faced larger hurdles ($M = 28.4 \pm 7.3$) compared to females ($M = 25.1 \pm 6.9$), $t(146) = 2.97$, $p = 0.003$, $d = 0.47$.

Experience-Level Differences

Clinicians with more than 3 years of experience had substantially higher documentation scores ($M = 43.1 \pm 4.9$) compared to those with less than 3

years ($M = 37.8 \pm 6.3$), $t(146) = 5.67$, $p < 0.001$, and a large effect size ($d = 0.94$). Novice clinicians reported significantly greater impediments ($M = 28.9 \pm 7.1$) than experienced clinicians ($M = 23.5 \pm 5.8$), $t(146) = -5.12$, $p < 0.001$, $d = 0.85$.

Qualification Differences

MSN-prepared nurses beat GDSN nurses in documentation quality ($M = 42.8 \pm 5.2$ vs. $M = 38.1 \pm 6.0$), $t(79) = 4.89$, $p < 0.001$, $d = 0.83$, and displayed significantly better EHR tool use ($M = 4.3 \pm 0.7$ vs. $M = 3.5 \pm 0.9$), $t(79) = 5.67$, $p < 0.001$, $d = 1.02$. The considerable impact sizes for experience and qualification disparities ($d = 0.85-1.02$) emphasize the necessity of focused training for inexperienced and underqualified employees.

INDEPENDENT T TEST Table NO. 1.5.

Comparison Group	Variable	Mean \pm SD (Group 1)	Mean \pm SD (Group 2)	t-value	df	p-value	Cohen's d	Interpretation
Gender (Male vs. Female)	Documentation Score	38.2 \pm 6.1	41.5 \pm 5.8	-3.82	146	<0.001	0.56	Females scored significantly higher
	Barrier Score	28.4 \pm 7.3	25.1 \pm 6.9	2.97	146	0.003	0.47	Males reported more barriers

Comparison Group	Variable	Mean ± SD (Group 1)	Mean ± SD (Group 2)	t-value	df	p-value	Cohen's d	Interpretation
	EHR Impact Score	22.1 ± 4.2	24.8 ± 3.9	4.12	146	<0.001	0.67	Females perceived greater benefits
Experience (>3yrs vs ≤3yrs)	Documentation Score	43.1 ± 4.9	37.8 ± 6.3	5.67	146	<0.001	0.94	Experienced nurses scored higher
	Barrier Score	23.5 ± 5.8	28.9 ± 7.1	5.12	146	<0.001	0.85	Novices faced more barriers
Qualification (MSN vs GDSN)	Documentation Score	42.8 ± 5.2	38.1 ± 6.0	4.89	79	<0.001	0.83	MSN nurses performed better
	EHR Tool Usage	4.3 ± 0.7	3.5 ± 0.9	5.67	79	<0.001	1.02	MSN nurses utilized tools more

1. Linear Regression: Predicting Documentation Quality

Regression Analysis of Factors Influencing EHR Documentation Quality

The regression analysis revealed numerous major characteristics that were strongly linked with EHR documentation quality. Clinical experience was shown to be the best predictor of documentation quality in the linear regression model ($R^2 = 0.42$, $p < 0.001$). Clinicians with more than three years of experience scored 4.12 points higher (95% CI [2.45, 5.79], $p < 0.001$). ICU department affiliation had a substantial positive connection ($\beta = 3.55$, $p = 0.001$), and female physicians scored 2.87 points higher than males ($p < 0.001$). Notably, each increased point on the barrier scale linked to a 0.62-point decline in documentation quality ($p < 0.001$). However, each additional hour of EHR training improved scores by 0.33 points ($p = 0.003$).

The logistic regression analysis supported these findings while offering additional information on determinants of outstanding documentation (top 25% of scores). ICU doctors were 3.12 times more likely to receive high documentation ratings (95% CI [2.01, 4.85], $p < 0.001$), indicating exceptional performance. Clinical experience was associated with 2.89 times higher chances of excellent documentation ($p < 0.001$), whereas female clinicians had 2.34 times higher odds ($p = 0.002$). The barrier score was a significant negative predictor, with each unit increase lowering the probability of good documentation by 42% (OR = 0.58, $p < 0.001$).

These findings imply three main conclusions. First, clinical experience appears to be critical for both baseline documentation quality and the possibility of obtaining excellence. Second, organizational variables (departmental affiliation) and demographic traits (gender) consistently affect

documentation outcomes. Third, adjustable characteristics such as perceived impediments and training opportunities provide specific targets for quality improvement activities. The consistency of these findings across both regression methodologies increases confidence in their

validity, while further longitudinal research may assist establish causal links. These findings have clear practical implications for targeted training programs and process optimization initiatives to improve EHR documentation quality in healthcare settings.

Table no. 1.6.

Predictor	β	SE	t	p	95% CI	VIF
(Intercept)	28.41	2.15	13.21	<0.001	[24.18, 32.64]	-
Gender (Female)	2.87	0.72	3.99	<0.001	[1.45, 4.29]	1.12
Experience (>3yrs)	4.12	0.85	4.85	<0.001	[2.45, 5.79]	1.08
ICU Department	3.55	1.02	3.48	0.001	[1.54, 5.56]	1.21
Barrier Score	-0.62	0.09	-6.89	<0.001	[-0.80, -0.44]	1.34
EHR Training Hours	0.33	0.11	3.00	0.003	[0.11, 0.55]	1.15

2. Table No.1.7. Logistic Regression: Predicting High Documentation Scores

Predictor	OR	SE	z	p	95% CI
Gender (Female)	2.34	0.38	3.12	0.002	[1.38, 3.96]
Experience (>3yrs)	2.89	0.42	4.01	<0.001	[1.85, 4.51]
ICU Department	3.12	0.51	4.55	<0.001	[2.01, 4.85]
Barrier Score	0.58	0.07	-4.22	<0.001	[0.45, 0.75]

Chapter 5

Discussion:

This study investigated nurses' EHR documentation practices, perceived barriers, and the impact of demographic variables in a tertiary care setting. The findings complement and build on previous research on EHR implementation in nursing practice. The study indicated that nurses consistently recorded vital signs (mean=4.3±0.6) and properly documented patient status (mean=4.1±0.7). These findings support Häyrynen's (2008) discovery that

structured EHR systems increase documentation accuracy by adding standardized fields and prompts (1). Wang (2011) discovered that digital records reduce omissions in clinical documentation compared to paper-based systems (4). However, chances for improvement emerged, particularly in care plan updates (mean=3.4±1.3) and the use of standardized templates (mean=3.7±1.1). This contradicts Kelley (2011), who found higher template adoption rates in contexts with compulsory EHR training programs (6). This gap might be related to limited training

opportunities in our research group, since 30% of nurses reported inadequate preparation for EHR use, which is comparable with findings from Alquraini (2007) in similar hospital settings (3). Significant departmental variations in documentation quality were seen, with ICU nurses consistently outperforming their counterparts in other units. The ICU outperformed Medical in terms of timely recording ($p=0.002$) and EHR tool usage ($p<0.001$), supporting Lovink's (2019) conclusion that high-acuity environments encourage extensive documentation due to greater clinical and legal concerns (10). However, chances for improvement emerged, particularly in care plan updates (mean= 3.4 ± 1.3) and the use of standardized templates (mean= 3.7 ± 1.1). This contradicts Kelley (2011), who found higher template adoption rates in contexts with compulsory EHR training programs (6). This gap might be related to limited training opportunities in our research group, since 30% of nurses reported inadequate preparation for EHR use, which is comparable with findings from Alquraini (2007) in similar hospital settings (3). Significant departmental variations in documentation quality were seen, with ICU nurses consistently outperforming their counterparts in other units. The ICU outperformed Medical in terms of timely recording ($p=0.002$) and EHR tool usage ($p<0.001$), supporting Lovink's (2019) conclusion that high-acuity environments encourage extensive documentation due to greater clinical and legal concerns (10).

Surprisingly, male nurses reported significantly more challenges than their female counterparts ($t=2.97$, $p=0.003$), expanding our understanding of gender differences in technology use. While other studies, such as Mbananga (2002), have found gender disparities in attitudes about health technology (17), our findings suggest that these differences may translate into significant gaps in documenting experiences, necessitating more investigation. Nurses considered EHRs beneficial for documentation accuracy (Mean= 4.4 ± 0.7) and error reduction (Mean= 4.2 ± 0.8), supporting Jefferies' (2010) findings that organized documentation enhances patient safety (21).

However, ratings of workflow efficiency were moderate (Mean= 4.1 ± 0.8), confirming Koivunen's (2018) observation that poorly designed EHR systems might disrupt clinical workflows despite potential benefits (8). This ambivalence highlights the dual nature of EHR impacts: although they improve certain aspects of documentation, they may also present new challenges in clinical practice.

Experience and education were identified as key determinants of document quality. Over three years of experience resulted in much better documentation ($t=5.67$, $p<0.001$), corroborating Yontz's (2015) finding that experienced nurses made less errors (12). MSN-prepared nurses outperformed those with GDSN degrees ($t=4.89$, $p<0.001$), validating Kinnunen's (2019) emphasis on higher education to improve EHR proficiency (11). These findings emphasize the need of both clinical experience and formal teaching in fostering effective EHR use. The regression analysis revealed that experience ($\beta=4.12$, $p<0.001$) and ICU participation ($\beta=3.55$, $p=0.001$) were the most important factors influencing documentation quality. These findings confirm Button's (2014) suggestion for unit-specific training programs to enhance EHR documentation (19). However, system impediments continue to have a negative influence ($\beta=-0.62$, $p<0.001$), as noted by Rouleau (2015) in prior research (16). Several findings differ from the previous study. While Moen (2006) shown that younger nurses adapt more quickly to EHR systems (13), our study found no significant age-related differences, most likely due to the comparable training procedures utilized in our sample. Similarly, our findings showed lower adoption of standardized templates than those reported by Akhu-Zaheya (2018) in analogous settings (14). This might indicate differences in template design or deployment strategies among enterprises. These variances highlight the context-dependent nature of EHR adoption and the importance of considering local circumstances when assessing study findings. The study's conclusions have several practical implications. First, they underline the importance of specific training interventions, particularly for

inexperienced nurses and those working in non-ICU settings.

Second, they emphasize the need of overcoming system usability issues, identifying poor interface design and system instability as significant barriers to successful documentation. Finally, gender inequalities in barrier perception suggest that training programs may need to be tailored to the various needs and preferences of nursing staff. These principles reinforce Uslu's (2008) call for user-centered approaches to EHR adoption (18) and provide guidance for quality improvement efforts.

Strengths of the Study:

1. To acquire a thorough picture of EHR documentation procedures in tertiary care, the study polled 148 nurses from diverse departments (Medical, Surgical, ICU, CCU, Emergency, and Pediatric).
2. The study employed descriptive statistics, chi-square tests, t-tests, and regression analysis to give quantitative and comparative insights into the factors that influence documentation quality.
3. The regression models revealed that experience, ICU affiliation, training hours, and hurdles all had a significant influence on EHR documentation quality, which supported previous studies.
4. Practical Policy Implications - The empirical findings support practical recommendations for healthcare organizations, such as ICU-led training for underperforming departments and enhanced system usability.

Limitations of the Study:

1. Cross-Sectional Study - Data was collected at a single point in time, making it difficult to establish causal relationships (for example, whether training directly improves documentation or better nurses seek further training).
2. Self-Reporting Bias: Self-reported recording techniques and perceived barriers may differ from objective audits of EHR records or direct observational data.
3. Limited Exploration of Workflow Factors - Although workload was identified as a significant barrier, the study did not look into specific workflow disruptions (e.g., interruptions,

multitasking) that might lead to documentation difficulties.

4. Lack of Qualitative Component - The study lacked in-depth interviews and focus groups, which resulted in a lack of nuanced insights on barriers such as gender and departmental differences, as well as nurses' perspectives on potential solutions.

Recommendation:

This study validates and adds on existing information of EHR documentation trends among nurses. While supplementing previous research on the advantages of structured documentation and the challenges of EHR implementation, it offers new information regarding departmental differences, gender inequalities, and the relative importance of experience vs education in determining documentation quality. Future research should delve at the underlying causes of gender discrepancies in barrier perception, as well as the long-term effects of specialized training programs. Answering these questions may help healthcare organizations realize the full potential of EHR systems while minimizing their disruptive influence on nursing practice.

Chapter 6

Conclusion:

This study finds crucial elements influencing nurses' EHR recording, revealing increased accuracy while addressing ongoing challenges like as workload and system usability. ICU nurses provided excellent documentation, and experience and education indicated proficiency. Unexpected gender difficulties emerged. The findings suggest that hospitals should focus on unit-specific training, technology enhancements, and gender-sensitive methods to increase EHR usage. The study underlines the importance of harmonizing technology, processes, and humans in healthcare recordkeeping.

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