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Role of Electronic Health Records (EHR) in Enhancing Nursing Efficiency: Evidence from the Indian Healthcare Setting

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Articalinfo

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Abstract

Electronic Health Records (EHRs) promise improved information access, workflow automation, and better care coordination—factors that can markedly affect nursing efficiency. This paper synthesizes published evidence and Indian experience to examine how EHR implementation influences nursing workflows, documentation time, patient-safety tasks, and job satisfaction in Indian hospitals and health systems. We review national guidance and adoption roadmaps, summarize empirical studies on nurses' perceptions and time use, and highlight real-world implementations (government/municipal HMIS and private hospital initiatives). Findings indicate measurable gains (faster information retrieval, improved medication safety, better handoffs) but also persistent barriers (usability, interoperability, training, workflow mismatch) that blunt potential efficiency benefits. We conclude with practical recommendations for Indian hospitals and policymakers to maximize the benefits of digital records for nursing.

Introduction



Nurses perform the majority of direct patient care and administrative documentation in hospitals; any improvement in record-keeping and information flow can therefore significantly affect overall efficiency. EHRs (or EMRs) are digital systems designed to store, retrieve, and share patient health information across care episodes, Ramoo et al., 2023. In India, national digital health initiatives and hospital-level implementations have accelerated EHR uptake, but adoption remains heterogeneous across public and private settings, Kirwa et al., 2025, TOI-2025. This review asks: **How do EHRs affect nursing efficiency in Indian healthcare settings?** We focus on measurable workflow changes (time on documentation, time available for bedside care), safety and coordination outcomes, and nurse experience (satisfaction, perceived

workload). Key Indian policy frameworks and recent examples of scale-up are also considered.

Methods

This is a narrative, evidence-synthesis paper combining: (a) peer-reviewed studies of EHR/EMR effects on nursing (global and India-specific), (b) policy/guideline documents and adoption roadmaps for India, and (c) selected news/case examples of Indian system implementations. Searches targeted PubMed/PMC, BMC journals, policy PDFs, and reputable news sources up to Nov 2025. Where India-specific empirical data were available (nurse perception, time-use studies, implementation case reports), these were emphasized. Representative citations are provided for major claims, Srivastava et al., 2018.



Background: EHR landscape in India

India's digital health architecture (including the Ayushman Bharat Digital Mission / National Digital Health Blueprint guidance and EHR standards) and a range of public and private sector initiatives have created a dispersed but growing EHR ecosystem. Roadmaps for adoption emphasize phased implementation, interoperability standards, and capacity-building—yet many institutions still operate mixed paper–digital workflows. Municipal and hospital HMIS implementations (e.g., recent municipal HMIS rollouts) demonstrate scale potential for digitizing OPD/IPD, pharmacy, diagnostics, and patient IDs—each relevant to nursing workflows.

How EHRs can improve nursing efficiency — mechanisms & empirical findings

Mechanisms (how efficiency gains arise)

1. **Faster access to patient information** — single-screen medication lists, vitals, labs reduce time spent searching paper charts.
2. **Structured documentation & templates** — fewer handwritten notes, standardized flowsheets shorten documentation time for routine tasks.
3. **Automated alerts & safety checks** — e.g., medication interaction alerts reduce time spent verifying drug orders and



prevent adverse events.

satisfaction and perceived
efficiency improve.

4. **Task assignment, handover support, and dashboards** — improve coordination and reduce redundant activities.

5. **Data reuse for reporting and audits** — reduces duplicate charting for KPIs and admin reports.

Empirical evidence (selected findings)

- **Nurse perceptions and satisfaction:** Studies in teaching hospitals and tertiary centers show mixed but generally positive nurse perceptions when systems are usable and training is adequate. Where nurses report good usability,

- **Documentation time:** International comparisons show variable results — some studies report small increases in documentation time immediately after EHR introduction (learning curve), while many show decreased time per task after stabilization and with well-designed templates. A meta/empirical review notes improved maternal-care process metrics with EMRs in some settings.

- **Real-world Indian implementations:** Municipal/state HMIS and private hospital digital initiatives demonstrate large-



scale digitization of OPD/IPD processes and report improved throughput, better dashboarding for managers,

and reduced manual errors—benefits that indirectly support nursing efficiency by simplifying clerical burdens.

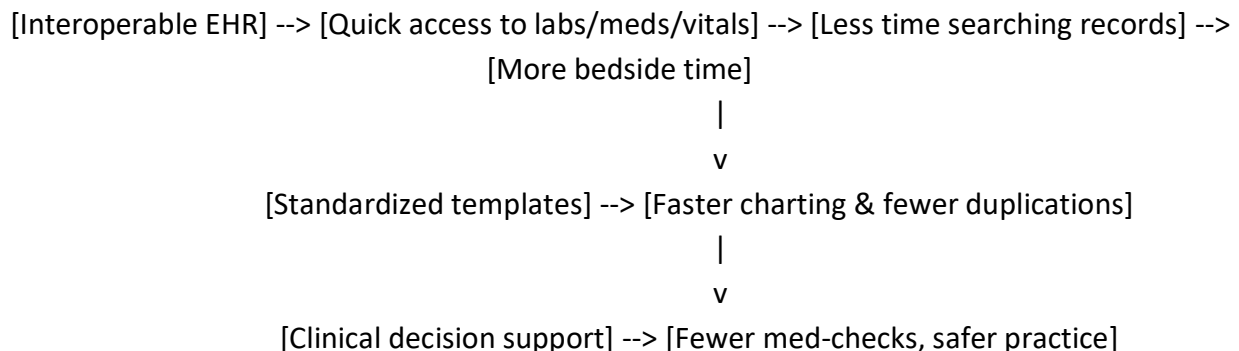
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Table- 1: Benefits vs. Challenges for Nursing

Domain	Potential Benefits for Nursing Efficiency	Common Challenges (India-relevant)
Documentation & time use	Faster retrieval; standardized templates reduce duplicate charting	Initial learning curve; poorly-designed UI increases clicks/time
Medication & safety	CDS alerts reduce verification time and errors	Alert fatigue; poor integration with pharmacy systems
Care coordination	Shared records, discharge summaries, and scheduling improve handovers	Interoperability gaps across institutions; UHID linkage incomplete
Administrative reporting	Auto-generated reports reduce manual compilation	Data quality/entry burden shifts to nurses
Workforce wellbeing	Reduced clerical load frees time for bedside care	Increased screen time; resistance if workflows not aligned



Illustrative figure (conceptual): Pathway from EHR features → nursing efficiency



Discussion

Evidence suggests that EHRs **can** improve nursing efficiency in Indian settings, but gains are conditional on several factors:

1. Usability & workflow fit:

Systems designed with nurse input and aligned to ward workflows produce the largest time-savings. Where systems are implemented top-down

without iterative user-centered design, nurses report higher workload and frustration.

2. Training & change management:

Initial increases in documentation time are common; sustained efficiency gains require comprehensive training, super-user networks, and realistic timelines for adoption.



3. **Interoperability & standards:**

National EHR standards and UHID initiatives are enabling cross-facility data flows; however, incomplete interoperability creates duplicated documentation and erodes efficiency. Government guidance on standards is a critical enabler.

4. **Local implementation context:**

Large private hospitals with mature digital budgets (and now AI/automation pilots) have reported more pronounced efficiency gains (including task automation to relieve nurses), whereas smaller facilities often struggle with costs and integration. Recent municipal HMIS rollouts show measurable throughput improvements when implemented broadly and linked to patient IDs.

5. **Safety trade-offs:** Alerts and structured order sets can speed routine verifications but also lead to alert fatigue—careful

configuration is essential.

Recommendations for Indian hospitals & policymakers

1. **Design with nurses, not for them:** Involve frontline nursing staff in requirements, UI testing, and pilot phases.

2. **Phased rollouts + protected training time:** Expect a short-term productivity dip; provide extra staffing support during go-live.

3. **Adopt national standards & UHID early:** Interoperability reduces duplicated charting across facilities.

4. **Optimize templates & minimize clicks:** Use ward-specific templates and automation (order defaults, vital-sign flowsheets) to reduce repetitive data entry.

5. **Measure nursing-specific KPIs:** Track time spent on



documentation vs. bedside care, medication administration time, and handover errors to quantify benefits.

6. Invest in local IT support & super-users: Rapid issue resolution reduces downtime and frustration.

7. Explore targeted automation: Transcription/AI summarization for discharge notes and routine documentation may free nursing time—pilot carefully with clinician oversight.

Limitations of available evidence

- India-specific quantitative time-motion studies on nursing pre- vs. post-EHR are still limited; much evidence is from perception studies or extrapolated from international literature.
- Heterogeneity of systems and hospital contexts (public vs.

private; tertiary vs. primary) limits generalizability.

- Rapid technological advances (AI-assisted documentation) are evolving; real-world impact evidence is emergent.

Conclusion

EHRs hold substantial potential to enhance nursing efficiency in Indian healthcare—improving information access, reducing redundant charting, and enabling safer medication processes. Realizing these benefits requires user-centered design, investment in training and local support, adherence to interoperability standards, and careful change management. Indian policy frameworks and recent large-scale HMIS implementations demonstrate that system-level digitization is feasible, but the quality of implementation will determine whether nurses gain time for patient care or are burdened by clerical tasks.



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