

Nursing Informatics Applications: Transforming Clinical Documentation and Decision-Making in the Era of Digital Healthcare

Rajendra Kumar Sahu

HOW TO CITE THIS ARTICLE:

Rajendra Kumar Sahu. Nursing Informatics Applications: Transforming Clinical Documentation and Decision-Making in the Era of Digital Healthcare. *Jr of Glob Pub Hea.* 2026; 3(1): 52–60.

ABSTRACT

Nursing informatics is an emerging discipline that integrates nursing science with information and communication technologies to enhance patient care, streamline clinical workflows, and support data-driven decision-making. In India, where healthcare systems are increasingly being digitized under initiatives such as the Ayushman Bharat Digital Mission, the role of nursing informatics is becoming critical. This review explores the need for nursing informatics applications, focusing on their impact across hospital wards, primary healthcare centers, and community health settings. It examines key application areas, including patient management, staff duty scheduling, inventory control, referral systems, and post-discharge follow-up. The paper highlights how these systems improve patient outcomes, increase nursing efficiency, support public health planning, and align India with global digital health standards. It also addresses challenges such as resistance to change, training requirements, data privacy, and system interoperability. The findings underscore the importance of equipping nurses with informatics competencies to ensure their active participation in India's healthcare transformation and to achieve equitable, efficient, and technology-driven care delivery.

KEYWORDS

• Nursing Informatics • Digital Health • Patient Care Optimization • Healthcare Technology in India • Data-Driven Decision-Making

AUTHOR'S AFFILIATION:

Nurse B cum Nurse Educator, Department of Nursing Service and Education, Homi Bhabha Cancer Hospital & Mahamana Pandit Madan Mohan, Malviya Cancer Centre, Varanasi, Uttar Pradesh, India.

CORRESPONDING AUTHOR:

Rajendra Kumar Sahu, Nurse B cum Nurse Educator, Department of Nursing Service and Education, Homi Bhabha Cancer Hospital & Mahamana Pandit Madan Mohan Malviya Cancer Centre, Varanasi, Uttar Pradesh, India.

E-mail: Gloriousdhamtari@gmail.com

➤ **Received:** 27-02-2026 ➤ **Accepted:** 30-04-2026



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the Red Flower Publication and Open Access pages (<https://www.rfppl.co.in>)

INTRODUCTION

Nursing informatics is a specialized discipline that supports nurses in making informed clinical and administrative decisions by integrating nursing science with information structures, processes, and technology. It enhances nurses' ability to deliver safe, efficient, and patient-centered care across various healthcare settings by improving access to accurate data, streamlining documentation, and facilitating communication within interprofessional healthcare teams.

The American Nurses Association (ANA) defines nursing informatics as "the specialty that integrates nursing science with multiple information management and analytical sciences to identify, define, manage, and communicate data, information, knowledge, and wisdom in nursing practice."¹

India's healthcare system is undergoing a digital revolution. The launch of the Ayushman Bharat Digital Mission on September 27, 2021, marked a major step towards establishing a unified digital health infrastructure.² With over 73 crore citizens having a digital health ID (ABHA ID), the government is promoting the adoption of Electronic Health Records (EHR), telemedicine, and interoperable health systems.³

Nurses are the largest group of healthcare professionals in India, working across hospitals, primary health centers, and community health settings.^{4,5} They are responsible for direct patient care, documentation, communication, and public health services. Nursing informatics, which integrates nursing science with information and communication technology, can greatly enhance how nurses perform these tasks efficiently and accurately.^{6,7}

The Government of India is rapidly advancing digital health through initiatives like the Ayushman Bharat Digital Mission (ABDM), which includes ABHA IDs, Electronic Health Records (EHRs), and telemedicine platforms such as e-Sanjeevani. To ensure these systems function effectively, nursing informatics applications are essential, as they train and enable nurses to actively support and contribute to the digital transformation of healthcare.

Digital tools in healthcare significantly reduce manual errors, enable real-time

documentation, and generate timely alerts for medications, allergies, and vital signs.⁸ Nursing informatics applications play a crucial role in enhancing patient care by streamlining these processes. They help reduce duplication of records, ensure accurate tracking of patient history across different healthcare facilities, and support nurses in making informed clinical decisions.⁹ Additionally, by improving data accuracy and timely interventions, these applications contribute to minimizing preventable adverse events, ultimately leading to safer and more efficient patient care.¹⁰

India's public hospitals and primary health centers (PHCs) often face high patient volumes and limited resources, placing significant strain on healthcare workers, especially nurses. Nursing informatics can ease this burden by automating routine documentation, providing access to decision-support tools, and enabling remote patient monitoring in community settings. These applications streamline workflows, reduce administrative workload, and allow nurses to focus more on patient care, ultimately improving both productivity and health outcomes.

Community health nurses play a vital role in collecting and managing large volumes of public health data, such as immunization records, maternal health information, and disease surveillance.¹¹ Nursing informatics supports this work by enabling the use of mobile health applications, facilitating real-time data reporting, and helping track and follow up with high-risk individuals. Additionally, it integrates seamlessly with national platforms like U-WIN and ABHA, enhancing the efficiency and effectiveness of community health services. Accurate digital records maintained by nurses enable local and national health authorities to analyze health trends, allocate resources efficiently, and respond promptly to disease outbreaks, improving overall public health management.

Implementing nursing informatics applications enhances nurses' digital skills, making them more efficient, confident, and respected members of multidisciplinary healthcare teams. It also creates new career opportunities in health IT, telehealth, and data analytics.¹²

Many developed countries have already integrated nursing informatics into healthcare systems and nursing education. To meet

global health standards and provide quality universal health coverage, India must invest in nursing informatics at scale, ensuring its healthcare workforce is digitally proficient and future-ready.

Application of Nursing Informatics Software

Nursing informatics software is a crucial tool that improves the quality, safety, and efficiency of patient care.¹³ It is utilized in clinical, administrative, and community health environments to support decision-making, streamline workflows, and enhance data management. Here are some key applications (Shown in Table 1):

1. Application of Nursing Informatics in Ward Management

1.1. Staff Duty Management

One of the critical areas where nursing informatics systems must be employed is in staff duty scheduling and management. These applications allow ward managers to:

- Create and manage duty rosters digitally.
- Track staff availability, shift preferences, and leave schedules.
- Allocate duties based on patient acuity levels and staff competencies.
- Monitor overtime and ensure fair shift rotations.
- Maintain the leave record of staff.

Functionality required:

- Interactive calendar view
- Drag-and-drop shift assignment
- Integration with biometric attendance systems
- Notification systems (SMS/email) for duty alerts

1.2. Patient Management and Nursing Care

Patient management modules are integral components of nursing informatics systems that assist nurses in handling the entire patient care journey from admission to follow-up. These modules streamline clinical workflows, improve documentation accuracy, and enhance communication between departments, ultimately contributing to better patient outcomes and nurse productivity.

1. Admission Management

During the admission process, nurses are responsible for collecting and documenting key patient information, including medical history, vital signs, allergies, and presenting complaints. Patient management modules:

- Automate patient registration and ID generation (linked to ABHA ID).
- Allow real-time access to existing electronic health records (EHRs).
- Enable risk stratification and initial triage using digital templates.
- Integrate with bed management systems to assign rooms or wards efficiently.
- This automation reduces paperwork and ensures that no critical information is missed during intake, especially in high-volume healthcare settings.

2. Treatment and Care Planning

Once admitted, the patient's treatment must be accurately tracked and documented. Patient management modules assist nurses in:

- Creating and updating digital nursing care plans.
- Monitoring vital signs, medication schedules, and clinical interventions.
- Recording physician orders, lab results, and diagnostic reports.
- Using Clinical Decision Support Systems (CDSS) to receive alerts for abnormal values, drug interactions, or overdue procedures.

This supports evidence-based, personalized care while minimizing human errors and delays in treatment.

3. Discharge Management

Discharge is a critical transition point in the patient care continuum. Proper discharge planning ensures continuity of care and reduces readmission rates. Patient management modules help nurses:

- Generate discharge summaries with comprehensive treatment history.
- Provide instructions for medication, wound care, and follow-up appointments.
- Print or digitally share discharge documents with patients and caregivers.

- Coordinate with other departments (e.g., pharmacy, billing, records) to complete discharge formalities smoothly.

Automating discharge processes helps reduce bottlenecks, especially in public hospitals with high patient turnover.

4. Post-Discharge Follow-up and Continuity of Care

Continuity of care is essential for recovery and long-term health outcomes. Patient management modules support post-discharge follow-up by:

- Scheduling follow-up appointments and remote check-ins via telehealth platforms.
- Sending automated reminders to patients via SMS or mobile apps.
- Enabling community health nurses to access and update records during home visits.
- Tracking patient progress and flagging missed appointments or deterioration in health status.

In community settings, this functionality is vital for managing chronic conditions, maternal and child health, and elderly care.

1.3. Treatment, Referral, and Clinical Opinion

A robust nursing informatics system plays a critical role in facilitating seamless coordination among multidisciplinary healthcare teams. It enables nurses to manage and streamline treatment plans, referrals, and clinical opinions through integrated digital platforms.

Key Applications:

- **Referral Module:** Allows nurses and physicians to request consultations from specialists directly within the system.
- **Document Sharing:** Facilitates the secure exchange of lab reports, diagnostic imaging, and patient histories.
- **Teleconsultation Tools:** Includes secure messaging and video conferencing for remote expert opinions, especially useful in rural or under-resourced areas.
- **Digital Treatment Charts:** Ensures real-time updates by both physicians and nurses, maintaining consistency and accuracy in patient care.

Advantages:

- **Reduces Delays:** Speeds up the referral process and eliminates unnecessary paperwork or follow-ups.
- **Enhances Traceability:** Every action or update is digitally recorded, improving accountability and reducing the risk of miscommunication.
- **Promotes Collaborative Care:** Encourages timely clinical decisions by connecting nurses with the broader care team efficiently.

By enabling smoother communication and faster decision-making, nursing informatics systems improve the overall quality and timeliness of patient care.

1.4. Stock and Inventory Management

Effective ward-level inventory control is essential to ensure the continuous availability of medical supplies, drugs, and consumables, directly impacting the quality and safety of patient care. Nursing informatics systems equipped with inventory management modules streamline this process through automation and real-time tracking.

Core Features:

- **Real-Time Stock Monitoring:** Tracks inventory levels of consumables, medications, linen, equipment, etc., across wards and units.
- **Auto-Alerts:** Sends notifications for low stock levels, approaching expiry dates, or reorder points.
- **Barcoding & RFID Tagging:** Enables accurate and quick scanning of items for issue, return, and tracking.
- **Usage Analytics:** Generates data on consumption trends to aid in procurement planning and reduce unnecessary ordering.

Benefits:

- **Prevents Stockouts & Overstocking:** Ensures that critical items are always available without overburdening storage.
- **Reduces Wastage & Theft:** Automated logs and alerts help identify misuse or discrepancies in inventory.
- **Improves Accountability:** Digital tracking provides clear usage records,

supporting audits and efficient resource management.

By integrating stock management into nursing informatics, hospitals can maintain better supply chain control, reduce operational inefficiencies, and support uninterrupted patient care.

Application Layout and Functional Architecture

An ideal nursing informatics application designed for use in hospital wards should focus on streamlining nursing workflows, enhancing patient care coordination, and improving communication among clinical teams. The application must offer intuitive user interfaces and robust back-end functionality to support the dynamic needs of nurses in a ward setting.

An ideal nursing informatics application for ward use should have the following layout and modules:

User Interface Design

To ensure high usability and clinical efficiency, the interface should follow these principles:

- **Role-based Dashboards:** Customizable dashboards tailored for different user roles (e.g., staff nurses, charge nurses, nurse managers), presenting relevant metrics, notifications, and tasks.
- **Mobile Accessibility:** The application should support tablet and smartphone interfaces for nurses to document and access information at the point of care, enhancing mobility and efficiency.
- **Color-coded Alerts and Notifications:** Visual prioritization of tasks such as:
 - **Red:** Critical labs, life-threatening issues
 - **Yellow:** Pending medications or overdue tasks
 - **Green:** Routine observations or completed actions

Table 1: Key Functional Modules

Module	Function
Dashboard	Provides a real-time summary of patient count, task list, alerts, and shift staffing.
Staff Management	Enables roster scheduling, attendance tracking, competency mapping, and shift handovers.

Module	Function
Patient Care	Core clinical documentation: admissions, nursing assessments, care plans, nursing notes, medication administration records (MAR).
Referral System	Allows initiation and tracking of consultations with other departments, including clinical notes, responses, and status updates.
Inventory	Manages stock usage, low-supply alerts, requisitions, and expiry tracking of medical and nursing supplies.
Reporting	Generates structured reports such as daily summaries, quality indicators, patient safety KPIs, handover notes, and audit logs.

Additional Architectural Considerations

- **Interoperability:** The application should integrate with Electronic Health Record (EHR) systems, Laboratory Information Systems (LIS), and Pharmacy Management Systems to ensure seamless data exchange.
- **Data Security & Compliance:** Support for encryption, user authentication, and audit trails in compliance with healthcare data standards.
- **Offline Functionality:** Ability to operate in offline mode during network outages, with auto-sync once connectivity is restored.
- **Customization & Scalability:** Modular design to allow hospital-specific customizations and scalability for use in multiple wards or facilities.
- **AI-Powered Decision Support:** Integration of AI to assist nurses and clinicians with real-time clinical decision support, such as identifying high-risk patients, suggesting interventions, or flagging anomalies in patient data.

Benefits of Integrating Nursing Informatics

Nursing informatics is transforming the way healthcare is delivered by integrating clinical practice with information technology. This integration enhances the efficiency, safety, and effectiveness of patient care while also empowering nurses with digital tools to perform their roles more effectively. Below are the key benefits of adopting nursing informatics in detail:

1. **Improved Patient Outcomes:** One of the most significant benefits of nursing informatics is its direct impact on patient care quality and safety. Through timely and accurate documentation, nurses can ensure that vital patient information is always up to date and accessible. Clinical Decision Support Systems (CDSS) integrated with nursing informatics tools provide alerts for potential medication errors, allergies, or abnormal vital signs, enabling timely interventions. Improved communication between nurses, physicians, and other healthcare professionals reduces the risk of miscommunication and supports coordinated care. As a result, patient outcomes improve through faster diagnoses, safer treatment, and reduced complications.
2. **Increased Efficiency and Productivity:** Nursing informatics helps automate routine tasks such as patient charting, medication administration records, shift handovers, and documentation of vital signs. This reduces the time spent on manual paperwork and allows nurses to devote more time to direct patient care. Workflow automation also minimizes redundancies, improves the handoff process between shifts, and standardizes procedures, leading to increased consistency in care delivery. With access to real-time patient data and decision-support tools, nurses can act more quickly and effectively, boosting both individual productivity and overall team efficiency.
3. **Cost-Effectiveness:** Integrating informatics into nursing practice helps reduce healthcare costs in multiple ways. Accurate documentation and digital records reduce the likelihood of billing errors and duplication of diagnostic tests. Inventory management systems ensure optimal usage of medical supplies, preventing both stockouts and overstocking, and reducing waste. Telehealth and remote monitoring tools lower the need for hospital readmissions and in-person consultations, especially in rural areas. Moreover, preventive care supported by timely data helps avoid expensive emergency treatments. All these elements contribute to better financial sustainability for healthcare facilities.
4. **Data-Driven Decision-Making:** Nursing informatics provides access to structured and unstructured healthcare data, which can be analyzed to identify trends, track outcomes, and guide policy decisions. Nurses and administrators can use dashboards and reports to monitor infection rates, medication adherence, patient satisfaction, and workload distribution. This data supports evidence-based practice, quality improvement initiatives, and resource planning. On a larger scale, aggregated data from nursing informatics tools contribute to public health surveillance, research, and population health management.
5. **Enhanced Professional Development and Empowerment:** Informatics empowers nurses by enhancing their digital literacy and integrating them more fully into multidisciplinary teams. With skills in health IT, nurses are better equipped to interpret data, contribute to care planning, and participate in hospital management decisions. It also opens up new career paths in clinical informatics, data analysis, telehealth coordination, and health IT leadership. In turn, this fosters job satisfaction, professional growth, and a stronger sense of ownership in the healthcare delivery process.
6. **Standardization and Accountability:** Digital systems help standardize nursing practices across institutions by using predefined templates and protocols. This ensures consistency in documentation, reduces variation in care delivery, and strengthens regulatory compliance. Digital logs provide a clear record of who performed which tasks and when, enhancing accountability and transparency. In the event of audits, litigation, or quality checks, electronic records provide verifiable data to support nursing actions and decisions.

Challenges and Considerations

1. While the integration of nursing informatics offers numerous benefits, successful implementation comes with its own set of challenges that must be addressed for sustainable and effective adoption.

2. **Resistance to Change:** One of the primary challenges is resistance from nursing staff, especially those unfamiliar with digital technologies. Many nurses may feel overwhelmed by the shift from traditional paper-based workflows to electronic systems, fearing increased workload or loss of personal interaction in patient care. Overcoming this resistance requires not only training but also a cultural shift within healthcare institutions to promote the value and ease of digital adoption.
3. **Training and Skill Development:** Implementing nursing informatics systems requires continuous education and training. Nurses must learn to use various digital tools such as Electronic Health Records (EHRs), clinical decision support systems, inventory software, and telehealth platforms. Moreover, as technology evolves, ongoing upskilling becomes essential to keep staff updated. Lack of proper training may lead to errors, underutilization of tools, and frustration among nursing personnel.
4. **Data Security and Privacy:** With the digitalization of patient information comes the critical responsibility of maintaining data security and privacy. Ensuring compliance with data protection laws is crucial. Unauthorized access, data breaches, or mishandling of sensitive information can lead to legal and ethical issues, eroding patient trust and institutional credibility.
5. **System Integration:** For nursing informatics to be effective, it must integrate seamlessly with other hospital systems such as EHRs, laboratory information systems, pharmacy, radiology, and billing platforms. Poor integration leads to fragmented data, duplication of effort, and workflow inefficiencies. Ensuring interoperability and compatibility between different software solutions remains a technical and organizational challenge, especially in multi-vendor environments.

Table 2: Layout of Nursing Informatics application

Module	Sub-Module/ Feature	Description	Functionality
<i>Dashboard</i>	Patient Census	Real-time count of admitted patients	Auto-updated, filter by unit/ ward
	Shift Assignments	Overview of nurse-patient assignments	Editable per shift; drag-and-drop interface
	Alerts & Reminders	Notifications for critical tasks	Color-coded alerts; auto-reminders for overdue tasks
	Quick Access Tiles	Shortcuts to major functions	One-click access to notes, meds, care plan, etc.
	Vital Signs Snapshot	Embedded real-time monitor view	Integrated with devices or manual entry
<i>Patient Management</i>	Patient Profile	Demographics, history, allergies	Searchable by MRN, name, and admission date
	Nursing Notes	Documented shift-wise using formats (SOAP, PIE, etc.)	Time-stamped entries with edit history
	Clinical Assessments	Physical, psychological, and neurological assessments	Template-based input with scoring tools
<i>Care Planning</i>	Nursing Diagnoses	Based on NANDA-I	Auto-suggestions based on input
	Goals & Outcomes	Linked to NOC	Editable goals with target dates
	Nursing Interventions	Linked to NIC	Suggested actions with the documentation checkbox
	Progress Tracker	Graph view of patient outcomes	Visual timeline and success rates
<i>Medication</i>	Medication Schedule	Display of MAR per patient	Scheduled doses, missed dose alert
	Barcode Scanning	For patient and drug verification	Prevents medication errors
	Drug Interaction Alert	Auto-alert for known contraindications	Linked to the clinical database
	Dose Administration Logging	Timestamp and user-logged administration	Auditable logs per drug

Module	Sub-Module/ Feature	Description	Functionality
<i>Communication</i>	Messaging	Internal secure messages between staff	Real-time chat with logging
	SBAR Report Tool	Format for handoff or emergency communication	Structured templates
	Task Delegation	Assign or forward tasks	With status and reminders
	Shift Handover Summary	Printable and digital handover report	Pulls data from notes, meds, and care plans
<i>Diagnostics Viewer</i>	Lab Reports	Latest lab values with flag for abnormal results	Integrated with LIS
	Imaging Results	Radiology and other diagnostic reports	Image viewing and report text
	Historical Trends	Graphs over time	E.g., haemoglobin over 7 days
<i>Education & References</i>	Drug Dictionary	Offline/online drug details	Search by brand/generic
	Patient Teaching Tools	Leaflets, videos, and discharge education	Customizable printouts
	Protocol & Guidelines	Institution policies and SOPs	Searchable and updated by the admin
<i>Analytics & Reports</i>	Nursing Audits	Quality audits (documentation, meds, hand hygiene)	Custom filters and PDF export
	Clinical Indicators	Pressure injury, falls, and infection rates	Tracked per ward/unit
	Report Generator	Custom statistical reports	Export to Excel/PDF
<i>Settings</i>	User Access & Roles	Nurse, supervisor, admin roles	Role-based access control
	Custom Form Builder	Design custom input templates	Drag-and-drop interface
	Theme & Language	Light/Dark mode and multilingual support	Individual preference setting
<i>Incident Reporting</i>	Reporting of the event	Categorise Minor/Major, Care/equipment/Other services	List menu and entry
<i>Help & Support</i>	Live Support	Chat or ticket-based support	With response time tracking
	User Manual	Built-in searchable documentation	Contextual help linked to modules
	Training Resources	Video tutorials and how-to guides	For new staff onboarding

DISCUSSION

India's healthcare landscape is rapidly evolving with the push for digitization under initiatives like the Ayushman Bharat Digital Mission (ABDM). However, the success of such initiatives depends heavily on the capacity of the healthcare workforce, particularly nurses, to adapt to and leverage digital tools. This review highlights the pressing need to integrate nursing informatics across all levels of care in India, from tertiary hospitals to rural community health programs.

Nurses in India form the backbone of the healthcare delivery system. Yet, they often operate under resource constraints and heavy workloads. Nursing informatics offers scalable solutions to these challenges through automation, real-time access to patient data, clinical decision support, and efficient communication. The software modules and functionalities discussed, ranging from duty management to inventory control, demonstrate how digital systems can streamline nursing workflows and free up valuable time for

patient care.

Moreover, community-level applications such as mHealth, mobile data capture, and real-time tracking are crucial in a country with a large rural population. Integration with national systems like ABHA and U-WIN ensures that nursing contributions are aligned with public health goals and digital infrastructure.

Despite the evident benefits, the successful implementation of nursing informatics faces several challenges. These include resistance to change, a lack of digital training, data privacy concerns, and technical issues around interoperability. Addressing these challenges through targeted training programs, robust system design, and policy support will be essential for sustainable adoption.

India also needs to align with global health informatics standards. Most developed nations have already integrated informatics into nursing curricula and practice, empowering nurses with advanced roles in data analysis, telehealth, and digital health coordination. For India to catch up and meet universal health

coverage goals, strategic investments in nursing informatics education and infrastructure are necessary.

CONCLUSION

Nursing informatics is no longer optional; it is essential for delivering efficient, safe, and patient-centered care in a digital healthcare ecosystem. As India continues to advance its digital health mission, empowering nurses with informatics tools and skills will be critical. Nursing informatics not only enhances individual nurse performance but also supports broader system-level improvements in care coordination, resource management, and data-driven public health planning.

By integrating nursing informatics into daily practice, Indian healthcare facilities can significantly improve patient outcomes, reduce errors, optimize workflows, and ensure that nurses are active participants in the country's digital health transformation. Moving forward, a well-supported roadmap involving policy reform, education, infrastructure development, and intersectoral collaboration will be key to realizing the full potential of nursing informatics in India.

Funding: No Funding received

Clinical Trial Number: NA

REFERENCES

1. **Carolyn, Sipes.** *Application of Nursing Informatics: Competencies, Skills, Decision-Making*. 2019. p. 6.
2. **Ministry of Health and Family Welfare.** Ayushman Bharat Digital Mission marks a Transformative Three-Year Journey towards enabling Digital Health. *Ministry of Health and Family Welfare*. [Online] 14 10 2024 . <https://www.mohfw.gov.in/?q=en/pressrelease-87#skipCont>.
3. **Press Information Bureau, Government of India, Ministry of Health and Family Welfare.** From Data to Diagnosis. *Pres Information beuro*. [Online] 20 January 2025. [Cited: 09 August 2025.] <https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2059537>.
4. *Role of nurse practitioners within health system in India: A case of untapped potential.* **Nanda, L., & Anilkumar, A.** 8, 2021, *Journal of family medicine and primary care*, Vols. 10, , pp. 2751–2756.
5. **Sharma, Binu.** Nurses are the centre of India's health care growth. *Hindustan Times*. [Online] 29 October 2024. [Cited: 10 August 2025.] <https://www.hindustantimes.com/ht-insight/public-health/nurses-are-the-centre-of-india-s-health-care-growth-101730197946013.html>.
6. **American Nurses Association.** *Nursing Informatics: Scope and Standards of Practice*. 2nd ed. s.l.: Maryland: American Nurses Association; , 2014.
7. *Identifying the Knowledge Structure and Trends of Nursing Informatics: A Text Network Analysis.* **Park J, Park J.** 1, 1 January 2023, *Comput Inform Nurs.*, Vol. 41, pp. 8-17.
8. *The impact of health information technology on patient safety.* **Alotaibi YK, Federico F.** 12, 2017, *Saudi Med J.* , Vol. 38, pp. 1173-1180.
9. *The evolving role of nursing informatics in the era of artificial intelligence.* **Abdulqadir J. Nashwan, JC A. Cabrega, MAN, Mutaz I. Othman, Mahmoud Abdelwahab Khedr, Yasmine M. Osman, Ayman Mohamed El-Ashry, Rami Naif, Ahmad A. Mousa.** 1, 2025, *International Nursing Review*, Vol. 72.
10. *Nursing informatics and patient safety outcomes in critical care settings: a systematic review.* **Shi Q, Wotherspoon R, Morphet J.** 1, 16 May 2025, *BMC Nurs.*, Vol. 24, p. 546.
11. **B, Rajashekar Reddy.** Role of Community Health Nurse: Functions, Responsibilities & Scope in India. *Swaasa*. [Online] 11 June 2025. [Cited: 13 August 2025.] <https://www.swaasa.com/in/en/blogarticle/role-of-community-health-nurse-functions-responsibilities-scope-in-india#:~:text=The%20role%20of%20a%20community%20health%20nurse%20is%20diverse%2C%20dynamic,populations%20to%20lead%20healthier%20lives..>
12. *Nursing Informatics as a Specialization in India: Present and Future.* **S. K. Meher, Sanjay Gupta, Shailendra Sharma, Mohamed Ibrahim M, Kamal Ajmera.** 2019, *MEDINFO 2019: Health and Wellbeing e-Networks for All*, Vol. 264, pp. 1955 - 1956.
13. *Nursing Informatics: A Growing Field with a Bright Future.* *nursingenotes.com*. [Online] <https://nursingenotes.com/nursing-informatics-growing-field-future/>.