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Understanding the Role of Artificial Intelligence in Community and Home Nursing Care: A Systematic Literature Review

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ABSTRACT

Community and home nursing care are increasingly central to health systems in response to population ageing, rising chronic disease burden, and the need to reduce avoidable hospital utilization. Artificial intelligence (AI) has emerged as a technological innovation with potential to support nursing practice in non-hospital settings. However, the role and implications of AI within community and home nursing care have not been systematically synthesized. This systematic literature review aimed to examine how AI supports community and home nursing practice, identify the types of AI technologies applied, and analyze their reported outcomes and implications for nursing care. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A total of 237 records were identified through electronic database searches. After duplicate removal and screening, 38 full-text articles were assessed for eligibility, and 15 studies were included in the final qualitative synthesis. The included studies, published between 2024 and 2026, encompassed diverse methodological designs and were conducted in community-based, home health, telemonitoring, and mobile nursing contexts. The findings indicate that AI technologies primarily include machine learning–based predictive models, clinical decision support systems, telemonitoring platforms, digital wound assessment tools, and large language model–supported analytics are used to enhance risk prediction, remote monitoring, chronic disease management, and care coordination. Across studies, AI was associated with improved early detection of clinical deterioration, enhanced workflow efficiency, and potential reductions in hospital admissions. Nevertheless, effective implementation depended on nurse engagement, system usability, digital literacy, and organizational support. The findings suggest that artificial intelligence may strengthen community and home nursing care when integrated within a human-centered and ethically informed framework that supports professional nursing judgment.

Keywords: Artificial intelligence; Community nursing; Home care; Clinical decision support; Remote monitoring

1. INTRODUCTION

Community and home nursing care have become increasingly central to contemporary health systems (Touzami et al., 2025). Population ageing, the rising prevalence of chronic diseases, and the need to reduce avoidable hospital utilization have shifted care delivery toward community health and home care settings (Ventura-Silva et al., 2024). Within these contexts, nurses play a critical role in

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monitoring health status, coordinating services, and supporting long-term management of complex conditions outside hospital environments.

Care delivery in community and home settings is characterized by high variability, limited resources, and greater professional autonomy (Hoelscher & Pugh, 2025). Nurses are required to make timely clinical judgments while considering biological, psychological, social, and environmental factors simultaneously (Kotp et al., 2025). The growing complexity of patient needs, particularly among older adults with multimorbidity, has intensified the demand for innovative approaches that strengthen monitoring, risk identification, and continuity of care (L. Zhao et al., 2025).

Artificial intelligence (AI) has emerged as a technological development with potential to support nursing practice in non-hospital settings (Karnehed et al., 2025). AI applications in health care include machine learning–based predictive models, decision support systems, and remote monitoring tools capable of analyzing large volumes of clinical and patient-generated data. In community and home nursing care, such technologies may assist in early detection of clinical deterioration, risk stratification, and coordination of interdisciplinary services (Thomas, 2025).

Although AI has been extensively discussed in hospital-based contexts, its role within community health and home care nursing remains less systematically synthesized. Existing literature frequently addresses digital health broadly without focusing specifically on AI applications from a nursing perspective in non-hospital settings (Milasan & Scott-Purdy, 2025). A clearer understanding of how AI supports community and home nursing practice is therefore required.

Recent reviews published between 2024 and 2026 have examined the integration of artificial intelligence in nursing practice; however, their scope and methodological focus differ from the present study. Several integrative and scoping reviews have explored artificial intelligence across diverse nursing domains, including clinical practice, education, management, and hospital-based care (El Arab et al., 2025; Wei et al., 2025). While these reviews provide valuable broad overviews, they frequently combine heterogeneous contexts without isolating community and home nursing environments as distinct analytical settings.

Other reviews have focused primarily on hospital or acute care applications, where infrastructure, staffing models, and decision-making hierarchies differ substantially from community-based practice (Ventura-Silva et al., 2024). In addition, some literature emphasizes professional perceptions of artificial intelligence or competency development rather than empirical implementation outcomes in real-world community and home care contexts (Henderson Betkus et al., 2026; Rony et al., 2024).

To date, limited systematic reviews have specifically synthesized empirical studies examining artificial intelligence applications exclusively within community and home nursing care settings. Unlike prior integrative and scoping reviews, this study applies a PRISMA-based systematic approach focused exclusively on recent empirical AI implementation in community and home nursing contexts between 2024 and 2026. By restricting the analysis to non-hospital environments and emphasizing implemented technologies rather than conceptual discussions alone, this review aims to provide a more context-specific and methodologically rigorous synthesis of current evidence.

This systematic literature review aims to examine the role of artificial intelligence in community and home nursing care, identify the types of AI technologies applied, and analyze their reported outcomes and implications for nursing practice.

2. CONCEPTUAL BACKGROUND

Community nursing and home nursing care are grounded in holistic, relational, and context-sensitive practice (Sharifikia et al., 2025). Care is delivered within patients' living environments, where clinical decision-making must consider biological, psychological, social, and environmental factors simultaneously (Christina et al., 2025). Unlike hospital-based care, community and home nursing

require greater autonomy, adaptive judgment, and sustained therapeutic relationships (Tsvetanov, 2024).

Three core principles underpin community and home nursing practice (Hijrah et al., 2025). First, caring emphasizes relational engagement, empathy, and trust between nurses and patients. Second, continuity of care ensures consistent monitoring and coordinated support across time and service transitions, particularly for individuals with chronic or complex conditions. Third, patient-centered care positions patients and families as active partners in decision-making and care planning.

Within this framework, artificial intelligence is conceptualized as a supportive tool rather than a replacement for professional nursing roles (Wei et al., 2025). AI technologies such as predictive analytics, remote monitoring systems, and clinical decision support tools are understood to augment nurses' capacity to interpret complex data, identify early risks, and coordinate care more effectively. Importantly, AI is positioned as complementary to clinical judgment, enhancing data-driven insights while preserving contextual interpretation and professional accountability.

In community and home nursing care, AI may contribute through three primary functions: supporting clinical judgment via decision-support systems, strengthening patient monitoring through real-time data analysis, and facilitating coordination of care across interdisciplinary services (Chaturvedi et al., 2025). This conceptual positioning provides the analytical foundation for examining how AI aligns with core nursing values and practice in non-hospital settings.

3. RESEARCH QUESTIONS

This systematic literature review was guided by the following research questions:

1) How does artificial intelligence support community and home nursing care practices?
2) What types of artificial intelligence technologies are utilized in community health and home care nursing settings?
3) Which areas of community and home nursing practice are most frequently supported by artificial intelligence applications?
4) What implications are reported for nursing practice, professional roles, and quality of care in community and home contexts?

4. METHODS

4.1 Review Design and Reporting Standard

This study was conducted using a systematic literature review design to synthesize empirical evidence regarding the role of artificial intelligence in community and home nursing care. The systematic review approach was selected to ensure a structured, transparent, and reproducible process in identifying and analyzing relevant studies.

The review was carried out in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The PRISMA framework guided each stage of the review process, including identification, screening, eligibility assessment, and final inclusion of studies. The use of PRISMA ensured methodological rigor and facilitated clear documentation of the study selection process.

Given the diversity of research designs, outcome measures, and implementation contexts across the included studies, a meta-analysis was not performed. Instead, a narrative synthesis approach was adopted to support conceptual interpretation of the findings.

4.2 Data Sources and Search Strategy

A comprehensive literature search was conducted across four major electronic databases: Scopus, PubMed, CINAHL, and Web of Science. These databases were selected due to their extensive coverage of nursing, health sciences, and digital health research. The search strategy was constructed using

Boolean operators and a combination of controlled vocabulary and free-text terms to ensure comprehensive retrieval of relevant studies. The core search string applied across databases was as follows: ("Artificial Intelligence") AND ("Home Care" OR "Community Health") AND ("Nursing"). Search terms were adapted to align with the indexing systems and subject headings specific to each database (e.g., MeSH terms in PubMed and CINAHL Headings where applicable). Filters were applied to limit results to peer-reviewed research articles published between 2024 and 2026 and written in English.

The 2024–2026 timeframe was deliberately selected to capture the most recent generation of artificial intelligence–enabled nursing applications, particularly those developed and implemented following the rapid advancement of machine learning systems and large language model integration in healthcare. This period reflects the current phase of accelerated digital transformation in community and home care contexts, thereby ensuring that the review synthesizes contemporary implementation evidence rather than earlier exploratory or purely conceptual discussions. All retrieved records were exported and compiled for screening. Duplicate entries were identified and removed prior to further review. The full Boolean search strategy for each database, including database-specific adaptations, is provided in Appendix A.

4.3 Eligibility Criteria

Eligibility criteria were established prior to screening to ensure consistency and alignment with the review objectives. Studies were included if they were original peer-reviewed research articles published in English between 2024 and 2026, focused on nursing practice in community or home care settings, and examined the clinical or care-related application of artificial intelligence technologies. Eligible studies were required to explicitly involve nursing roles or perspectives in the implementation or evaluation of AI.

Studies were excluded if they were conducted exclusively in hospital or acute care settings without relevance to community or home care, addressed nursing education without clinical implementation, or lacked empirical data (e.g., editorials, commentaries, conference abstracts, or protocols). Articles that did not clearly describe AI use in practice settings were also excluded.

4.4 Study Selection Process

The study selection process followed the PRISMA framework and consisted of four stages: identification, screening, eligibility assessment, and final inclusion. Titles and abstracts were screened to determine relevance to artificial intelligence, nursing practice, and community or home care contexts. Articles meeting preliminary criteria were subsequently reviewed in full text to assess eligibility according to the predefined inclusion and exclusion criteria. Screening and eligibility assessment were conducted by a single reviewer. To enhance methodological consistency, predefined inclusion and exclusion criteria were strictly applied throughout the screening process. All decisions were documented systematically to ensure transparency and traceability of study selection. The detailed results of the selection process are presented in Figure 1.

4.5 Quality Appraisal

Methodological quality of the included studies was assessed to ensure credibility and rigor of the synthesized evidence. The Joanna Briggs Institute (JBI) critical appraisal tools were used, with checklists selected according to each study's design (e.g., qualitative, quasi-experimental, or randomized controlled trials). The appraisal process evaluated clarity of research objectives, appropriateness of methodology, adequacy of data collection, rigor of analysis, and transparency of reporting. Studies were not excluded solely based on appraisal outcomes. However, quality assessment findings were considered when interpreting results and discussing the strength and limitations of the evidence.

Overall, the methodological quality of the included studies ranged from moderate to high. Most studies met the majority of JBI critical appraisal criteria, particularly in relation to clarity of objectives, appropriateness of study design, and transparency of data analysis. Randomized controlled trials and

retrospective cohort studies generally demonstrated stronger methodological rigor, whereas pilot and exploratory studies showed minor limitations related to sample size justification and control of confounding factors. No study was excluded based on appraisal results; however, methodological quality was considered during the interpretation of findings. Detailed appraisal checklists for each study are available upon request.

Table 1. Methodological Quality Appraisal (JBI)

Study	Design	JBI Criteria Met (n/N)	Quality Level
Laursen et al., 2024	Multimethod implementation study	8/10	High
Santos et al., 2024	Pilot implementation study	7/9	Moderate–High
Veyron et al., 2024	Pragmatic trial	9/11	High
Lin et al., 2024	Clinical trial	8/11	Moderate–High
Pan et al., 2024	Retrospective observational	8/9	High
Strauven et al., 2024	Algorithm development study	7/9	Moderate–High
H. Zhao et al., 2025	Quasi-experimental	8/9	High
Havreng-Théry et al., 2025	Retrospective cohort	9/11	High
Xu et al., 2025	Cross-sectional survey	7/8	Moderate–High
Sørensen et al., 2025	Qualitative study	8/10	High
Zuschnegg et al., 2025	Randomized controlled trial	10/13	High
Moolsart & Kritpolviman, 2025	Mixed-methods study	8/10	Moderate–High
Kollmann et al., 2025	Delphi study	7/9	Moderate–High
Henderson Betkus et al., 2026	Cross-sectional survey	7/8	Moderate–High
Wu et al., 2026	Randomized controlled trial	11/13	High

4.6 Data Extraction and Synthesis

Data extraction was performed using a standardized framework to ensure consistency across included studies. Extracted data comprised author(s), year, country, study design, sample characteristics, nursing context, type of artificial intelligence technology, and key findings relevant to nursing practice. The extracted information was organized according to the predefined research questions.

Given the heterogeneity of study designs and outcome measures, meta-analysis was not conducted. A narrative synthesis was therefore undertaken, supported by thematic analysis to identify patterns related to the roles, impacts, and challenges of artificial intelligence in community and home nursing care. This approach facilitated a structured and conceptually coherent interpretation of the findings.

5. RESULTS

5.1 Overview of Included Studies

Fifteen studies met the inclusion criteria and were included in the qualitative synthesis. All were published between 2024 and 2026, reflecting recent developments in artificial intelligence implementation within community and home nursing care. The studies were conducted across North America, Europe, Asia, and Australia, indicating growing international engagement with AI-supported nursing practice in non-hospital settings.

The included studies employed diverse designs, including randomized controlled trials, quasi-experimental and retrospective studies, pragmatic trials, mixed-methods research, and qualitative investigations. All focused on the implementation or evaluation of AI technologies within community-based, home health, telemonitoring, assisted living, or mobile nursing contexts.

The study selection process followed PRISMA guidelines (Page et al., 2021). From 237 identified records, 15 studies were ultimately included after screening and eligibility assessment. The detailed selection process is presented in Figure 1.

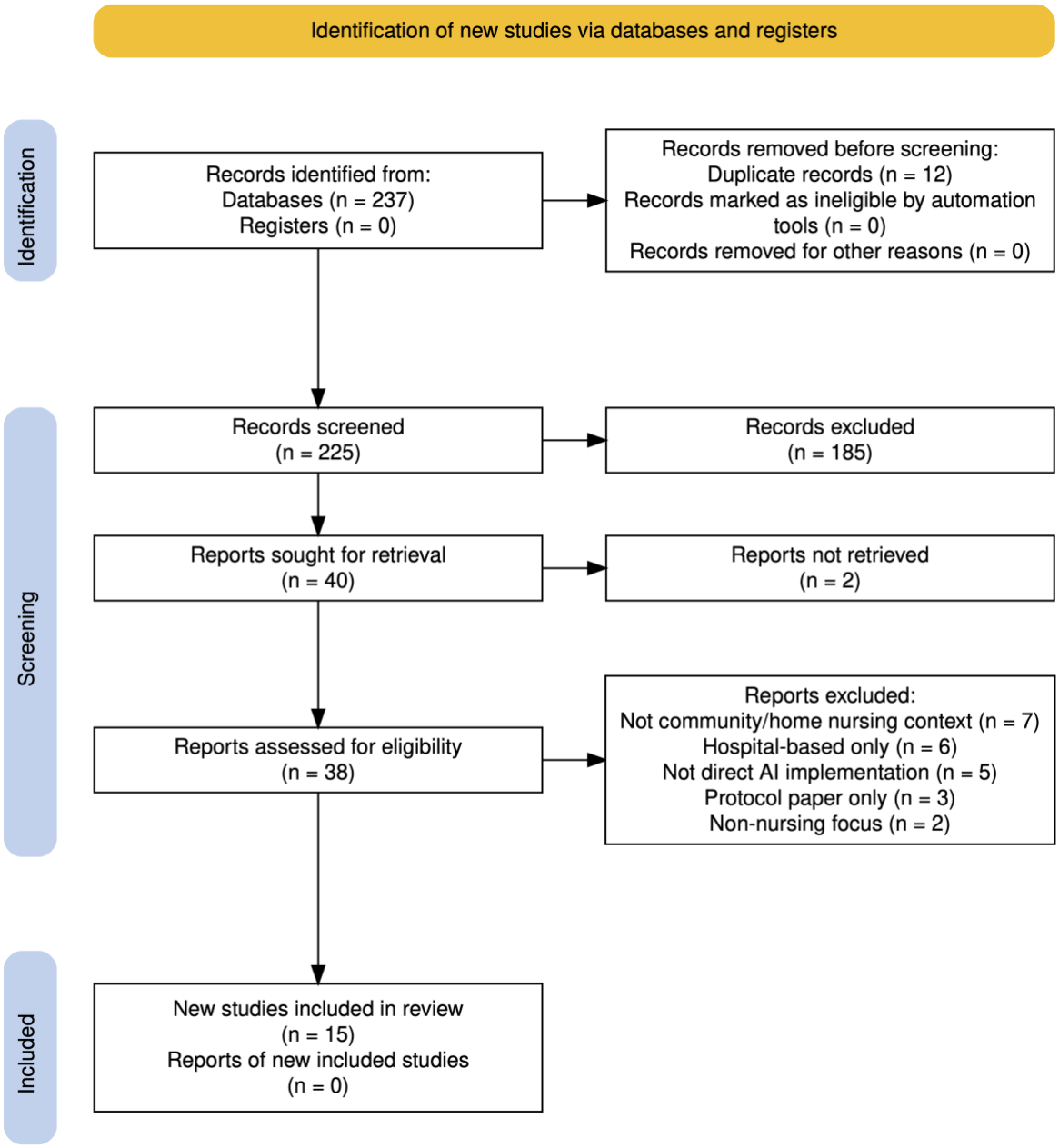

Figure 1. PRISMA Flow Diagram

As shown in Figure 1, a total of 237 records were identified through electronic database searching. After removal of 12 duplicate records, 225 articles remained for title and abstract screening. During this stage, 185 records were excluded because they did not meet the inclusion criteria, primarily due to lack of relevance to community or home nursing contexts, absence of artificial intelligence implementation in clinical practice, or insufficient involvement of nursing roles.

A total of 40 full-text reports were sought for retrieval, and 2 reports could not be accessed. Consequently, 38 full-text articles were assessed for eligibility. Following detailed evaluation, 23 articles were excluded for the following reasons: not conducted within community or home nursing settings (n = 7), hospital-based focus only (n = 6), no direct clinical AI implementation (n = 5), protocol-only publications without empirical findings (n = 3), and non-nursing focus (n = 2). Ultimately, 15 studies met all inclusion criteria and were included in the final qualitative synthesis.

Table 2. Characteristics of Included Studies

Author (Year)	Title	Sample	Method	Key Results
(Laursen et al., 2024)	Implementation of an algorithm for predicting exacerbations in telemonitoring: A multimethod study of patients' and clinicians' experiences	500 patients enrolled in community-based COPD telemonitoring	Multimethod implementation study (quantitative outcome data + qualitative experience analysis)	The algorithm supported earlier identification of exacerbation risk in community telemonitoring; however, integration required workflow adjustments and raised considerations regarding clinician workload and system usability
(Santos et al., 2024)	Predicting post-discharge complications in cardiothoracic surgery: A clinical decision support system to optimize remote patient monitoring resources	150 home-care patients	Pilot implementation	AI-supported telemonitoring enabled early detection of physiological deterioration and facilitated timely nurse-led intervention in home care settings
(Veyron et al., 2024)	Postimplementation Evaluation in Assisted Living Facilities of an eHealth Medical Device Developed to Predict and Avoid Unplanned Hospitalizations: Pragmatic Trial	118 older adults in 7 assisted living facilities (France)	Uncontrolled multicenter pragmatic trial	The machine learning–based monitoring system demonstrated high specificity and negative predictive value, supporting early risk identification and reducing unplanned hospitalizations when alert-triggered interventions were implemented
(Lin et al., 2024)	Evaluation of a Telemonitoring System Using Electronic National Early Warning Scores for Patients Receiving Medical Home Care: Pilot Implementation Study	300 patients receiving home-based post-discharge monitoring	Clinical trial	The cloud-based machine learning model achieved approximately 85% prediction accuracy in identifying patients at risk of adverse recovery outcomes, supporting early nursing intervention in home settings
(Pan et al., 2024)	Identifying Frailty in Older Adults Receiving Home Care Assessment Using Machine Learning: Longitudinal	95,042 older adults receiving home care in New Zealand	Retrospective observational / simulation study using machine learning classifiers	Machine learning classifiers (RF, XGBoost, MLP) showed varied predictive performance for mortality compared to regularized logistic regression; regularized logistic

	Observational Study on the Role of Classifier, Feature Selection, and Sample Size			regression provided strong AUC performance with large home-care data.
(Strauven et al., 2024)	Unobtrusive Nighttime Movement Monitoring to Support Nursing Home Continence Care: Algorithm Development and Validation Study	6 adult participants (experimental simulation)	Experimental algorithm development and validation using triaxial accelerometer data and XGBoost classification with leave-one-subject-out cross-validation	The developed model achieved robust classification performance (overall F1-score ~79.56 %), indicating promising potential of unobtrusive nighttime movement monitoring to support continence care in nursing home contexts using machine learning-based sensor analytics
(H. Zhao et al., 2025)	Postoperative self-care ability of continuous nursing based on artificial intelligence for stroke patients with neurological injury	200 stroke patients (postoperative)	Quasi-experimental study with routine follow-up and AI-assisted continuous care	AI-enhanced continuous nursing significantly improved patients' self-care ability (BI scores) and reduced depressive symptoms compared to control, along with better health compliance and lab indicators
(Havreng-Théry et al., 2025)	Cost-Effectiveness Analysis of a Machine Learning–Based eHealth System to Predict and Reduce Emergency Department Visits and Unscheduled Hospitalizations of Older People Living at Home: Retrospective Study	Older adults living at home (France)	Retrospective cohort study of ML-based remote monitoring	The ML-based eHealth system was cost-effective, reduced emergency department visits and unscheduled hospitalizations, and supported predictive risk stratification for home-based older adults
(Xu et al., 2025)	The Intention of Primary Health Nurses to Participate in Internet Plus Nursing Service: Cross-Sectional Survey	3,952 primary health nurses in Jiangsu Province, China	Cross-sectional survey using stratified convenience sampling	Primary health nurses showed overall medium-high intention to participate in Internet Plus Nursing Service (IPNS), with significant associations between intention and professional experience, workload perceptions, and socioeconomic factors

(Sørensen et al., 2025)	User Acceptance of a Home Robotic Assistant for Individuals With Physical Disabilities: Explorative Qualitative Study	Individuals with physical disabilities (20 patients)	Explorative qualitative study using semi-structured interviews and thematic analysis	Participants reported generally positive acceptance of the home robotic assistant. The technology was perceived as potentially supportive for daily activities, although usability challenges and contextual barriers were identified.
(Zuschnegg et al., 2025)	Psychosocial effects of a humanoid robot on informal caregivers of people with dementia: A randomised controlled trial with nested interviews	Informal caregivers of people with dementia (32 patients)	Randomized controlled trial with nested qualitative interviews conducted in home settings	No statistically significant psychosocial improvements were observed compared to the control group. However, caregivers expressed overall positive attitudes toward the humanoid robot while highlighting usability and integration considerations.
(Moolsart & Kritpolviman, 2025)	Self-Health Monitoring by Smart Devices and Ontology Technology for Older Adults With Uncontrolled Hypertension: Quasi-Experimental Study	Community nurses (n=40+) in home/community care setting	Mixed methods evaluation study (quantitative workflow analysis and qualitative interviews)	AI-supported documentation system reduced documentation time, improved data accuracy, and enhanced workflow efficiency; nurses reported improved usability but emphasized the need for training and system integration.
(Kollmann et al., 2025)	The Requirements and Development Potential of Interdisciplinary Digital Health Data Exchange in Mobile Nursing and Care Settings in German-Speaking Countries: Delphi Study	Interdisciplinary experts in mobile nursing and care settings (German-speaking countries; Delphi panel participants)	Delphi study	Consensus was reached on key requirements for interoperable digital health data exchange in mobile nursing. Findings highlighted the need for standardized data structures, secure interoperability, role-based access, and nurse involvement in system design to support interdisciplinary coordination in community and mobile care settings.
(Henderson Betkus et al., 2026)	Community Health Nurses' Knowledge and Perceptions of AI in Canada: National Cross-Sectional Survey	228 community health nurses (CHNs) in Canada	Open cross-sectional survey with descriptive and chi-square analysis	CHNs varied in AI awareness/knowledge; good AI knowledge was associated with more positive perceptions about AI revolutionizing nursing, though concerns about

				accountability were prevalent.
(Wu et al., 2026)	Effectiveness of a digital technology-assisted personalized exercise prescription in the telerehabilitation of postoperative coronary heart disease patients: A randomized controlled trial	Postoperative coronary heart disease patients	Randomized controlled trial	Digital technology–assisted personalized exercise prescription significantly improved rehabilitation outcomes compared with usual care, supporting the effectiveness of telerehabilitation in postoperative coronary heart disease management.

The main characteristics of the included studies are presented in Table 2. The studies were conducted across Europe, Asia, and North America and applied varied methodological designs, including randomized controlled trials, quasi-experimental studies, retrospective analyses, mixed-methods research, and qualitative investigations.

All studies were situated in community-based, home health, telemonitoring, assisted living, or mobile nursing settings. The AI technologies identified primarily comprised machine learning–based predictive models, telemonitoring systems, sensor-based analytics, digital wound assessment tools, rehabilitation platforms, and AI-integrated electronic health record systems.

Across studies, AI was applied to support remote patient monitoring, early risk detection, chronic disease management, post-discharge follow-up, and care coordination. Artificial intelligence was consistently positioned as a supportive tool that enhanced nursing assessment and decision-making rather than replacing professional judgment.

Reported outcomes included improved early identification of clinical deterioration, reduced hospital admissions, enhanced patient functional outcomes, and increased workflow efficiency. Implementation success, however, was influenced by factors such as system usability, interoperability, nurse engagement, and organizational readiness.

The available evidence indicates that artificial intelligence offers meaningful opportunities to strengthen community and home nursing care, particularly when its integration is guided by ethical considerations and aligned with core nursing values.

5.2 Types of Artificial Intelligence Technologies

The included studies reported several categories of artificial intelligence technologies applied in community and home nursing care. The most frequently identified technologies were machine learning-based predictive models, clinical decision support systems, and remote patient monitoring platforms.

Machine learning algorithms were commonly used to predict clinical deterioration, hospitalization risk, exacerbations of chronic disease, or recovery outcomes following discharge. These models analyzed electronic health records, physiological data, or patient-generated information to support proactive nursing interventions. Clinical decision support systems were integrated into digital platforms or electronic health record systems to assist nurses in risk stratification, care prioritization, and care planning.

Remote monitoring technologies, including wearable devices, home-based sensors, and smart health systems, were applied to collect real-time physiological and behavioral data within patients' home environments. In several instances, natural language processing and advanced analytics were employed to process large volumes of health-related data, thereby enhancing clinical documentation

and risk identification. The technologies were primarily designed to support assessment, continuous monitoring, and care coordination processes in non-hospital nursing care settings.

5.3 Roles of Artificial Intelligence in Community and Home Nursing Care

Across the included studies, artificial intelligence was positioned as a supportive tool that enhanced nursing capacity in four principal domains. Artificial intelligence strengthened remote patient monitoring through continuous data collection from wearable devices, sensors, and telemonitoring systems. These technologies enabled early identification of physiological changes and potential clinical deterioration. This function was particularly relevant for patients with chronic conditions managed in home and community settings. Artificial intelligence also contributed to clinical judgment support. Predictive algorithms and decision-support tools assisted nurses in identifying high-risk individuals, prioritizing interventions, and improving consistency in clinical decision-making. These systems were consistently described as complementary to professional judgment rather than substitutes for nursing expertise. Artificial intelligence facilitated chronic disease management by supporting symptom tracking, medication adherence monitoring, and individualized care adjustments over time. Such applications reinforced longitudinal monitoring and continuity of care for patients with complex or chronic conditions. Artificial intelligence further enhanced care coordination. Integrated digital platforms improved communication among community nurses, primary care providers, and multidisciplinary teams. Interoperability with electronic health records facilitated more efficient information exchange across care settings. Artificial intelligence therefore reinforced proactive, data-informed, and coordinated care delivery within community and home nursing practice..

5.4 Reported Outcomes and Impacts

The reviewed studies reported several positive outcomes associated with the implementation of artificial intelligence in community and home nursing care. In relation to quality of care, artificial intelligence was associated with improved early detection of clinical risks and more timely nursing interventions. Enhanced risk stratification enabled nurses to respond proactively to patient deterioration in home environments. With respect to patient safety, predictive analytics and continuous monitoring systems contributed to reductions in unplanned hospital admissions and emergency department visits in several studies. Early alerts facilitated prompt assessment and intervention, thereby supporting safer home-based care.

Artificial intelligence also demonstrated potential to improve nursing workflow efficiency. Automation of data analysis, documentation support, and prioritization tools reduced administrative burden and allowed nurses to allocate time more effectively to direct patient care. However, the magnitude of impact varied across studies, and positive outcomes were closely linked to system usability, integration within existing workflows, and organizational support structures.

5.5 Challenges and Ethical Considerations

Several implementation challenges and ethical considerations were identified across the included studies. Technological integration was frequently reported as a barrier. Limited interoperability between systems, inconsistent infrastructure in community settings, and increased cognitive workload associated with managing multiple digital tools were noted as challenges affecting adoption. Data privacy and security concerns were prominent, particularly given that patient data were collected within private home environments. Issues related to confidentiality, data ownership, informed consent, and transparency of algorithmic decision-making were highlighted.

Variations in digital literacy and readiness among community and home care nurses were also reported. Insufficient training and limited organizational support were associated with reduced confidence in interpreting AI-generated outputs. Concerns regarding professional autonomy and accountability were discussed in several studies. The need to maintain clarity regarding responsibility for AI-informed decisions was emphasized, particularly in settings where nurses practice independently. Overall, the findings suggest that while artificial intelligence demonstrates potential

benefits for community and home nursing care in the reviewed studies, its implementation requires careful consideration of workflow integration, ethical governance, and sustained professional support.

6. DISCUSSION

This systematic literature review examined how artificial intelligence is conceptualized and implemented within community and home nursing care. The findings indicate that AI is predominantly positioned as a supportive technology that augments professional nursing practice rather than replacing it (Al Khatib & Ndiaye, 2025). Across studies, AI was applied to enhance risk identification, strengthen remote monitoring, and facilitate care coordination in non-hospital environments (Chae et al., 2025).

The integration of AI within community and home nursing care can be interpreted in relation to core nursing values, including caring, continuity of care, and patient-centeredness (Rony et al., 2024). The reviewed evidence suggests that AI can reinforce continuity by enabling earlier detection of deterioration between scheduled visits and supporting proactive intervention (Groos et al., 2024). Decision-support systems and predictive models may also contribute to more individualized care planning by assisting nurses in interpreting complex clinical data.

Nevertheless, tensions emerge regarding professional autonomy and relational care. Community and home nursing practice is inherently contextual and relational, requiring sensitivity to social, environmental, and psychosocial factors that may not be fully captured by algorithmic outputs (Secor et al., 2024). Consequently, clinical judgment appears to remain central in community practice, and AI-generated recommendations were generally described as complementary rather than directive within the reviewed studies.

The findings further indicate that AI adoption may influence the evolving professional role of community nurses. While administrative efficiency and workload prioritization may be improved, new competencies in digital literacy, data interpretation, and ethical reasoning are required (Gonzalez-Garcia et al., 2024). Questions related to accountability and responsibility in AI-informed decision-making are particularly salient in settings where nurses practice autonomously (Badawy et al., 2025).

The relational dimension of community and home nursing care was consistently emphasized across studies as an important consideration in artificial intelligence integration (Mohammed et al., 2025). Although AI may enhance efficiency and safety, excessive technological reliance could risk diminishing the therapeutic presence central to nursing practice. The evidence underscores the importance of human-centered design and active nurse involvement in AI development and implementation (Ramadan et al., 2024). Successful integration appears to be influenced not only by technological performance but also by ethical alignment with professional standards and nursing values, as reflected in the reviewed evidence.

7. IMPLICATIONS FOR NURSING PRACTICE, EDUCATION, AND POLICY

The findings of this review have several implications for nursing practice, education, and policy within community and home care contexts. For nursing practice, artificial intelligence offers opportunities to enhance proactive care delivery. AI-supported monitoring systems may enable earlier intervention for patients at risk of deterioration, while predictive analytics may assist in prioritizing caseloads and optimizing resource allocation. However, effective integration requires that AI tools be embedded within existing workflows without increasing cognitive burden. The reviewed studies suggest that community and home care nurses are positioned as central decision-makers, with AI functioning primarily as a decision-support resource rather than a prescriptive mechanism.

In nursing education, the findings indicate a need to strengthen foundational competencies in artificial intelligence and digital health literacy among community and home care nurses. Undergraduate and graduate curricula may incorporate essential concepts related to data interpretation, algorithmic transparency, ethical AI use, and clinical integration in community-based care. Continuing professional development programs are equally important to ensure that practicing nurses are supported

in adapting to evolving digital technologies. Educational efforts should emphasize critical thinking and ethical responsibility to preserve professional judgment.

From a policy perspective, the findings highlight the importance of governance frameworks to guide AI implementation in community and home nursing care. Regulations addressing data privacy, algorithm transparency, accountability, and patient consent are particularly important given that care is delivered within private home environments. The reviewed literature highlights the importance of involving community and home care nurses in AI design and evaluation processes. Additionally, equitable access to AI-enabled services should be prioritized to avoid widening disparities between regions or populations with differing levels of digital infrastructure. Collectively, these implications underscore that AI adoption must be accompanied by organizational readiness, ethical oversight, and professional engagement.

8. LIMITATIONS

Several limitations warrant consideration. The number of empirical studies specifically addressing artificial intelligence in community and home nursing care remains limited compared to hospital-based research. This imbalance may reflect the relatively recent expansion of AI applications in non-hospital settings.

The included studies demonstrated considerable heterogeneity in study design, AI technologies, outcome measures, and patient populations. Such variation limited the feasibility of quantitative synthesis and necessitated reliance on narrative thematic analysis. Accordingly, the conclusions are derived from conceptual patterns and thematic convergence rather than pooled effect sizes.

The review was restricted to English-language publications within a defined time frame. Relevant studies published in other languages or outside the selected period may not have been captured. Rapid technological advancement may also result in emerging applications that are not yet represented in the literature. Despite these constraints, the review provides a structured synthesis of recent evidence and contributes to a clearer understanding of AI integration within community and home nursing contexts.

Potential sources of bias must also be acknowledged. Restricting inclusion to English-language publications may have introduced language bias by excluding relevant studies published in other languages. Limiting database searches to four major electronic databases may have resulted in database restriction bias, as studies indexed elsewhere may not have been retrieved. Publication bias cannot be excluded, since studies reporting positive findings regarding artificial intelligence implementation may be more likely to be published than those reporting null or negative results. These factors may influence the comprehensiveness of the synthesized evidence.

CONCLUSION

This systematic literature review synthesizes current evidence on the role of artificial intelligence in community and home nursing care. The findings indicate that AI technologies, particularly predictive analytics, decision-support systems, and remote monitoring platforms, are increasingly used to enhance risk assessment, support clinical judgment, facilitate chronic disease management, and improve coordination of care in non-hospital settings.

The synthesized evidence indicates that artificial intelligence may contribute to strengthening community and home nursing care, particularly in the context of population ageing and increasing chronic disease burden. Nevertheless, the reviewed studies suggest that alignment with core nursing values is an important consideration in AI implementation, including caring, continuity, and patient-centeredness. Across the included studies, AI was generally positioned as a supportive instrument that augments, rather than replaces, professional nursing judgment.

A human-centered and ethically informed approach was frequently emphasized in the literature as supportive of responsible AI integration. Future research should focus on long-term clinical outcomes, patient and nurse experiences, and sustainable implementation models tailored to community and home care environments. When integrated within appropriate ethical and organizational frameworks, artificial

intelligence may contribute to high-quality, responsive, and sustainable community and home nursing practice, although further empirical research remains necessary.

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REFERENCES

Al Khatib, I., & Ndiaye, M. (2025). Examining The Role of AI In Changing The Role of Nurses in Patient Care: Systematic Review. *JMIR Nursing*, *8*, E63335. https://doi.org/10.2196/63335

Badawy, W., Zinhom, H., & Shaban, M. (2025). Navigating Ethical Considerations In The Use Of Artificial Intelligence For Patient Care: A Systematic Review. *International Nursing Review*, *72*(3). https://doi.org/10.1111/inr.13059

Chae, S., Davoudi, A., Song, J., Evans, L., Bowles, K. H., Mcdonald, M. V., Barrón, Y., Min, S. H., Oh, S., Scharp, D., Xu, Z., & Topaz, M. (2025). Developing A Clinical Decision Support Framework for Integrating Predictive Models Into Routine Nursing Practices in Home Health Care for Patients with Heart Failure. *Journal Of Nursing Scholarship*, *57*(1), 165–177. https://doi.org/10.1111/jnu.13030

Chaturvedi, U., Chauhan, S. B., & Singh, I. (2025). The Impact of Artificial Intelligence on Remote Healthcare: Enhancing Patient Engagement, Connectivity, and Overcoming Challenges. *Intelligent Pharmacy*, *3*(5), 323–329. https://doi.org/10.1016/j.ipha.2024.12.003

Christina, J., Ford, K., Menz, B., Sorich, M., Hopkins, A., Ramsey, I., Duddle, M., Kitson, A., & Paterson, C. (2025). Integrating The Caring Life Course Theory and Artificial Intelligence Applications to Enhance Cancer Care Across The Continuum. *Seminars in Oncology Nursing*, *41*(6), 152040. https://doi.org/10.1016/j.soncn.2025.152040

El Arab, R. A., Al Moosa, O. A., Sagbakken, M., Ghannam, A., Abuadas, F. H., Somerville, J., & Al Mutair, A. (2025). Integrative Review of Artificial Intelligence Applications in Nursing: Education, Clinical Practice, Workload Management, and Professional Perceptions. *Frontiers in Public Health*, *13*. https://doi.org/10.3389/fpubh.2025.1619378

Gonzalez-Garcia, A., Pérez-González, S., Benavides, C., Pinto-Carral, A., Quiroga-Sánchez, E., & Marqués-Sánchez, P. (2024). Impact of Artificial Intelligence–Based Technology on Nurse Management: A Systematic Review. *Journal Of Nursing Management*, *2024*(1). https://doi.org/10.1155/2024/3537964

Groos, S. S., Linn, A. J., Kuiper, J. I., Van Schoor, N. M., Van Der Velde, N., & Van Weert, J. C. M. (2024). Combining User-Centered Design and Behavioral Theory To Enhance Health Technologies: A Personas-Based Approach for A Primary-Care Based Multifactorial Falls Risk Assessment Tool. *International Journal Of Medical Informatics*, *186*, 105420. https://doi.org/10.1016/j.ijmedinf.2024.105420

Havreng-Théry, C., Fouchard, A., Denis, F., Veyron, J.-H., & Belmin, J. (2025). Cost-Effectiveness Analysis of A Machine Learning–Based Ehealth System To Predict and Reduce Emergency Department Visits And Unscheduled Hospitalizations of Older People Living at Home: Retrospective Study. *JMIR Formative Research*, *9*, E63700. https://doi.org/10.2196/63700

Henderson Betkus, M., Banner, D., Currie, L., Jackson, P., & Freeman, S. (2026). Community Health Nurses' Knowledge and Perceptions Of AI in Canada: National Cross-Sectional Survey. *JMIR Nursing*, *9*, E78560–E78560. https://doi.org/10.2196/78560

Hijrah, H., Norma Lala, N. S., Datu, N., Ruben, S. D., & Wang, S. L. (2025). Optimizing The Role of Family Nurses in Improving Community Health A Holistic Approach: Literature Review. *Jurnal Ilmiah Kesehatan Sandi Husada*, *14*(1), 73–86. https://doi.org/10.35816/jiskh.v14i1.1249

Hoelscher, S. H., & Pugh, A. (2025). N.U.R.S.E.S. Embracing Artificial Intelligence: A Guide to Artificial Intelligence Literacy for The Nursing Profession. *Nursing Outlook*, *73*(4), 102466. https://doi.org/10.1016/j.outlook.2025.102466

Karnehed, S., Larsson, I., Petersson, L., Erlandsson, L.-K., & Tyskbo, D. (2025). Navigating Artificial Intelligence in Home Healthcare: Challenges And Opportunities in Nursing Wound Care. *BMC Nursing*, *24*(1), 660. https://doi.org/10.1186/s12912-025-03348-7

Kollmann, V., Traugott, N., Hensely-Schinkinger, S., Zeidler, D., & Haslinger-Baumann, E. (2025). The Requirements And Development Potential Of Interdisciplinary Digital Health Data Exchange in Mobile

Nursing and Care Settings In German-Speaking Countries: Delphi Study. *Journal Of Medical Internet Research*, *27*, E78193. https://doi.org/10.2196/78193

Kotp, M. H., Ismail, H. A., Basyouny, H. A. A., Aly, M. A., Hendy, A., Nashwan, A. J., Hendy, A., & Abd Elmoaty, A. E. E. (2025). Empowering Nurse Leaders: Readiness for AI Integration and The Perceived Benefits of Predictive Analytics. *BMC Nursing*, *24*(1), 56. https://doi.org/10.1186/s12912-024-02653-x

Laursen, S. H., Hæsum, L. K. E., Egmose, J., Kronborg, T., Udsen, F. W., Hejlesen, O. K., & Hangaard, S. (2024). Implementation of An Algorithm for Predicting Exacerbations In Telemonitoring: A Multimethod Study of Patients' And Clinicians' Experiences. *International Journal Of Nursing Studies Advances*, *7*, 100257. https://doi.org/10.1016/j.ijnsa.2024.100257

Lin, C.-F., Chang, P., Chang, H.-M., Chen, C.-T., Hsu, P.-S., Wu, C.-L., & Lin, S.-Y. (2024). Evaluation Of A Telemonitoring System Using Electronic National Early Warning Scores for Patients Receiving Medical Home Care: Pilot Implementation Study. *JMIR Medical Informatics*, *12*, E63425–E63425. https://doi.org/10.2196/63425

Milasan, L. H., & Scott-Purdy, D. (2025). The Future of Artificial Intelligence In Mental Health Nursing Practice: An Integrative Review. *International Journal Of Mental Health Nursing*, *34*(1). https://doi.org/10.1111/inm.70003

Mohammed, S. A. A. Q., Osman, Y. M. M., Ibrahim, A. M., & Shaban, M. (2025). Ethical and Regulatory Considerations In The Use of AI And Machine Learning in Nursing: A Systematic Review. *International Nursing Review*, *72*(1). https://doi.org/10.1111/inr.70010

Moolsart, S., & Kritpolviman, K. M. (2025). Self-Health Monitoring By Smart Devices and Ontology Technology for Older Adults With Uncontrolled Hypertension: Quasi-Experimental Study. *JMIR Nursing*, *8*, E73386–E73386. https://doi.org/10.2196/73386

Page, M. J., Mckenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., Mcdonald, S., … Moher, D. (2021). The PRISMA 2020 Statement: An Updated Guideline For Reporting Systematic Reviews. *BMJ*, N71. https://doi.org/10.1136/bmj.n71

Pan, C., Luo, H., Cheung, G., Zhou, H., Cheng, R., Cullum, S., & Wu, C. (2024). Identifying Frailty In Older Adults Receiving Home Care Assessment Using Machine Learning: Longitudinal Observational Study on The Role of Classifier, Feature Selection, and Sample Size. *JMIR AI*, *3*, E44185. https://doi.org/10.2196/44185

Ramadan, O. M. E., Alruwaili, M. M., Alruwaili, A. N., Elsehrawy, M. G., & Alanazi, S. (2024). Facilitators and Barriers To AI Adoption in Nursing Practice: A Qualitative Study of Registered Nurses' Perspectives. *BMC Nursing*, *23*(1), 891. https://doi.org/10.1186/s12912-024-02571-y

Rony, M. K. K., Kayesh, I., Bala, S. Das, Akter, F., & Parvin, Mst. R. (2024). Artificial Intelligence in Future Nursing Care: Exploring Perspectives of Nursing Professionals - A Descriptive Qualitative Study. *Heliyon*, *10*(4), E25718. https://doi.org/10.1016/j.heliyon.2024.e25718

Ruksakulpiwat, S., Thorngthip, S., Niyomyart, A., Benjasirisan, C., Phianhasin, L., Aldossary, H., Ahmed, B., & Samai, T. (2024). A Systematic Review of The Application Of Artificial Intelligence in Nursing Care: Where Are We, and What's Next? *Journal Of Multidisciplinary Healthcare*, *Volume 17*, 1603–1616. https://doi.org/10.2147/jmdh.s459946

Santos, R., Ribeiro, B., Sousa, I., Santos, J., Guede-Fernández, F., Dias, P., Carreiro, A. V., Gamboa, H., Coelho, P., Fragata, J., & Londral, A. (2024). Predicting Post-Discharge Complications in Cardiothoracic Surgery: A Clinical Decision Support System to Optimize Remote Patient Monitoring Resources. *International Journal Of Medical Informatics*, *182*, 105307. https://doi.org/10.1016/j.ijmedinf.2023.105307

Secor, A. M., Justafort, J., Torrilus, C., Honoré, J. G., Kiche, S., Sandifer, T. K., Beima-Sofie, K., Wagner, A. D., Pintye, J., & Puttkammer, N. (2024). "Following The Data": Perceptions of And Willingness to Use Clinical Decision Support Tools to Inform HIV Care Among Haitian Clinicians. *Health Policy And Technology*, *13*(3), 100880. https://doi.org/10.1016/j.hlpt.2024.100880

Sharifikia, I., Hosseinnejad, A., Farokhzadian, J., & Rohani, C. (2025). Professional Competence in Community Health Nursing Practice: A Concept Analysis. *BMC Nursing*, *25*(1), 5. https://doi.org/10.1186/s12912-025-04141-2

Sørensen, L., Sagen Johannesen, D. T., Melkas, H., & Johnsen, H. M. (2025). User Acceptance of A Home Robotic Assistant for Individuals With Physical Disabilities: Explorative Qualitative Study. *JMIR Rehabilitation and Assistive Technologies*, *12*, E63641. https://doi.org/10.2196/63641

Strauven, H., Wang, C., Hallez, H., Vanden Abeele, V., & Vanrumste, B. (2024). Unobtrusive Nighttime Movement Monitoring to Support Nursing Home Continence Care: Algorithm Development and Validation Study. *JMIR Nursing*, *7*, E58094–E58094. https://doi.org/10.2196/58094

Thomas, J. (2025). Artificial Intelligence in Nursing Research: A Narrative Review of Transforming Clinical Practice, Enhancing Patient Outcomes, and Shaping Future Care. *Journal of Nursing Reports in Clinical Practice*, *3*(4), 368–374. https://doi.org/10.32598/jnrcp.2410.1189

Touzami, S., Bencharki, B., Jaafar, M., Roussi, E. H., Barkat, A., & Laamiri, F. Z. (2025). Community Health Nurses In Low- and Middle-Income Countries: A Systematic Integrative Review of Roles, Barriers, And Improvement Perspectives. *International Nursing Review*, *72*(4). https://doi.org/10.1111/inr.70128

Tsvetanov, F. (2024). Integrating AI Technologies Into Remote Monitoring Patient Systems. *International Conference On Electronics, Engineering Physics and Earth Science (EEPES 2024)*, 54. https://doi.org/10.3390/engproc2024070054

Ventura-Silva, J., Martins, M. M., Trindade, L. De L., Faria, A. Da C. A., Pereira, S., Zuge, S. S., & Ribeiro, O. M. P. L. (2024). Artificial Intelligence in The Organization of Nursing Care: A Scoping Review. *Nursing Reports*, *14*(4), 2733–2745. https://doi.org/10.3390/nursrep14040202

Veyron, J.-H., Deparis, F., Al Zayat, M. N., Belmin, J., & Havreng-Théry, C. (2024). Postimplementation Evaluation In Assisted Living Facilities of An Ehealth Medical Device Developed to Predict and Avoid Unplanned Hospitalizations: Pragmatic Trial. *Journal Of Medical Internet Research*, *26*, E55460. https://doi.org/10.2196/55460

Wei, Q., Pan, S., Liu, X., Hong, M., Nong, C., & Zhang, W. (2025). The Integration of AI In Nursing: Addressing Current Applications, Challenges, and Future Directions. *Frontiers in Medicine*, *12*. https://doi.org/10.3389/fmed.2025.1545420

Wu, Y., Ma, Y., Zhang, C., Wang, C., Zhang, S., Zhao, M., Su, H., Liu, C., Wang, Y., & Feng, X. (2026). Effectiveness of A Digital Technology-Assisted Personalized Exercise Prescription in The Telerehabilitation Of Postoperative Coronary Heart Disease Patients: A Randomized Controlled Trial. *International Journal Of Nursing Sciences*, *13*(1), 11–18. https://doi.org/10.1016/j.ijnss.2025.12.010

Xu, B., Li, S., Chen, K., Ding, L., & Liu, L. (2025). The Intention Of Primary Health Nurses To Participate in Internet Plus Nursing Service: Cross-Sectional Survey. *JMIR Nursing*, *8*, E72846–E72846. https://doi.org/10.2196/72846

Zhao, H., Li, N., & Zhang, J. (2025). Postoperative Self-Care Ability of Continuous Nursing Based on Artificial Intelligence for Stroke Patients With Neurological Injury. *SLAS Technology*, *32*, 100299. https://doi.org/10.1016/j.slast.2025.100299

Zhao, L., Chang, B., Hu, Q., Chen, X., Du, J., & Shao, S. (2025). The Health Care Needs of Multidimensional Frail Elderly Patients With Multimorbidity in Primary Health-Care Settings: A Qualitative Study. *BMC Primary Care*, *26*(1), 128. https://doi.org/10.1186/s12875-025-02836-8

Zuschnegg, J., Häussl, A., Lodron, G., Orgel, T., Russegger, S., Schneeberger, M., Fellner, M., Holter, M., Prodromou, D., Schultz, A., Roller-Wirnsberger, R., Paletta, L., Koini, M., & Schüssler, S. (2025). Psychosocial Effects of A Humanoid Robot on Informal Caregivers of People With Dementia: A Randomised Controlled Trial with Nested Interviews. *International Journal Of Nursing Studies*, *162*, 104967. https://doi.org/10.1016/j.ijnurstu.2024.104967