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Nurses' Role in Chronic Disease Management: A Systematic Review

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ABSTRACT

Background: Chronic illnesses such diabetes, cancer, stroke, cardiovascular disease, and chronic respiratory disorders cause substantial healthcare and financial burdens and are responsible for 74% of deaths worldwide. Through education, care coordination, support for self-management, and technological integration, nurse-led interventions have become a crucial tactic to enhance results. Focusing on types of interventions, multidisciplinary collaboration, patient outcomes, and the impact on the healthcare system, the aim of this systematic review was to evaluate and summarize the evidence for nurses' involvement in the management of chronic diseases.

Aim: The purpose of this systematic review was to assess and summarize evidence regarding nurses' roles in chronic disease management, including types of interventions, multidisciplinary teamwork, patient outcomes, and impact on the healthcare system.

Methods: Comprehensive searches were conducted on PubMed, Scopus, Embase, CINAHL, Cochrane Library, Web of Science, and JBI from start date through January 2025 were performed. Studies eligible for inclusion were randomized controlled trials, cohort studies, and systematic reviews of nurse-led interventions for chronic disease in adults. Study characteristics, intervention information, multidisciplinary participation, and outcomes were extracted from the data. Quality was assessed with established appraisal tools.

Results: Fifteen studies were included, covering various diseases, geographic locations, and delivery models. Five major themes were identified: digital and telehealth interventions, lifestyle change and risk factor management, organized education and self-management support, multidisciplinary care coordination, and contextual differences across healthcare systems. Nurse-led interventions uniformly improved self-management, clinical outcomes (e.g., glycemic control, blood pressure), care continuity, patient satisfaction, and minimized hospital use.

Conclusion: Nurse-led care is a mainstay of excellent chronic disease management. It increases patient activation, optimizes health outcomes, and enhances the efficiency of healthcare, especially when combined with digital technology and multidisciplinary teams. Scaling these models, with clear role definitions, sophisticated training, and comprehensive digital infrastructure, has the potential to reduce the global burden of chronic disease.

Keywords: Nurse-led care, Chronic disease management, Multidisciplinary collaboration, Telehealth, Self-management, Patient education.

Highlights:

1. Interventions led by nurses in 20 studies conducted in various healthcare settings enhanced clinical results, patient self-management, satisfaction, and fewer hospital admissions, with digital technologies and telehealth increasing reach in underserved populations.

2. Scaling and sustainability demand specialized training of nurses, unambiguous role descriptions, strong digital infrastructure, and focused research in low-resource environments, including incorporation of AI-facilitated decision-support systems.

INTRODUCTION

Chronic diseases—including cardiovascular disease, diabetes, cancer, stroke, and chronic respiratory disorders—present an immense and escalating challenge across the globe.(1) According to the World Health Organization and comprehensive analyses from Scopus and PubMed, chronic diseases now account for approximately 74% of global deaths and more than 61% of total disease burden in countries such as Bangladesh, with a growing majority of cases arising in low- and middle-income nations.(2) The Global Burden of Disease studies chronicle that 47% of Australians and live with at least one chronic disease, and the cost of managing these conditions forms the bulk of national healthcare expenditures.(3)

The socioeconomic consequences are severe: households with chronic disease sufferers face high financial risk, especially in countries where healthcare infrastructure is weak and insurance coverage minimal.(4)The importance of effective chronic disease management cannot be overstated. Real-world evidence from Australia's Medicare system demonstrates that coordinated, structured disease management programs significantly improve self-management skills, reduce complications, and optimize resource utilization.(5)

Structured disease management, particularly in primary care settings, enables regular monitoring, early intervention, and collaborative care planning—outcomes closely correlated with reduced preventable hospitalizations and better health indicators. (6)Crucially, effective management extends beyond clinical interventions; it empowers patients through education, promotes preventive care, and facilitates active participation in treatment decisions, yielding improved quality of life and lower mortality.

Central to these advances is the evolving role of nurses. Extensive qualitative research has illuminated how nurses adapt their functions throughout the chronic illness trajectory: from guiding undiagnosed patients, through education and care coordination, to providing advanced symptom management and emotional support at end-of-life(7).

Transitional care nurses are increasingly proactive, leveraging predictive tools for early identification of at-risk patients and adopting integrative strategies that span acute, community, and home settings. Nurses bridge crucial gaps between health and social care, facilitate multidisciplinary teamwork, and embrace technological innovations including telehealth and virtual monitoring to widen care access(8). In addition, studies highlight nurses' vital functions in educating patients for self-management, fostering resilience, and advocating for personalized, culturally sensitive care plans.(9)

Despite challenges such as workload pressures and emotional strain, ongoing professional development and the integration of technology continue to reinforce the critical position nurses occupy in optimizing chronic disease outcomes.(10) Real-world evidence across continents affirms that empowering nurses through advanced training, defined roles in care coordination, and digital resources not only boosts patient engagement but also yields measurable improvements in morbidity, mortality, and healthcare sustainability.(11)

The objective of this systematic review is to critically evaluate and synthesize existing evidence on the role of nurses in the management of chronic diseases—including cardiovascular disease, diabetes, cancer, stroke, and chronic respiratory disorders—with a focus on their contributions to patient education, care coordination, self-management support, use of technology, and multidisciplinary collaboration. The review aims to identify effective nursing interventions, assess their impact on patient outcomes and healthcare system performance, and highlight gaps in current research to inform policy, practice, and future studies.

METHODOLOGY

This systematic review followed internationally recognized protocols to ensure a comprehensive and unbiased synthesis of evidence regarding nurse-led interventions in chronic disease management. The review performed systematic searches across major electronic databases, including PubMed, Scopus, Embase, CINAHL, Cochrane Library, Web of Science, and JBI, capturing all relevant studies from inception through January 2025.

Search terms combined controlled vocabulary and keywords, such as "nurse-led intervention," "chronic disease management," "self-care," "continuity of care," "patient education," and "telehealth," utilizing Boolean operators to enhance coverage and sensitivity. Reference lists of selected articles and systematic reviews were hand-searched to identify further relevant studies and minimize publication bias. No language restrictions were initially applied; however, articles ultimately included were published in English only.

Studies were eligible if they satisfied the following criteria:

2.1. **Inclusion:-** Randomized controlled trials, cohort studies, and systematic reviews reporting nurse-led interventions targeted at adults (≥18 years) with chronic diseases (e.g., diabetes, cardiovascular disease, chronic kidney disease, respiratory disease, multimorbidity).

The intervention had to be primarily managed and delivered by registered nurses—whether face-to-face, telehealth, or mixed modalities—and report outcomes related to clinical status, healthcare utilization, self-management, patient satisfaction, or quality of life.

2.2. **Exclusion:**

1. Interventions solely pharmacological or surgical.
2. Studies not conducted by professionally qualified nurses.
3. Studies lacking sufficient detail on nurse roles or without relevant outcome measures.
4. Letters, editorials, conference abstracts, protocols, and studies not peer-reviewed.

2.3. **Data Extraction:**

Data from the 20 eligible PubMed-indexed studies were independently extracted by two reviewers and verified for consistency. Extraction variables were aligned with the study characteristics table to ensure uniformity and completeness.

1. General Information: Author(s), year of publication, and country where the research was conducted.

2. Chronic Disease Profile: Primary chronic condition(s) addressed in the study (e.g., diabetes, cardiovascular disease, chronic obstructive pulmonary disease, stroke, multimorbidity) along with any relevant patient demographics reported (age range, sex distribution where available).

3. Intervention Description: Specific type of nurse-led intervention implemented (e.g., structured patient education, care coordination, telehealth-based monitoring), the defined role of the nurse within the multidisciplinary team, delivery mode (in-person, virtual, or hybrid), frequency/intensity of contact, and the healthcare context (primary care, community, hospital-based, specialised clinic).

4. Multidisciplinary Collaboration: Composition of the healthcare team involved alongside nurses (e.g., physicians, allied health professionals, pharmacists, therapists, technology specialists) and the nature of their contribution to care delivery.

5. Outcome Measures: Reported results including clinical indicators (e.g., HbA1c, blood pressure, pulmonary function), healthcare utilization data (hospital admissions, emergency visits, cost savings), patient-reported measures (self-management capability, satisfaction, quality of life), and indicators of care quality (continuity of care, adherence rates, functional outcomes).

A third reviewer resolved discrepancies in data extraction. Study quality was assessed using validated tools such as the Cochrane Risk of Bias tool. This rigorous methods approach ensures the reliability and validity of the findings, supporting the synthesis of robust, practice-relevant evidence on nurse-led interventions in chronic disease care.

RESULTS

3.1. Study Selection: A brief overview of the identification of Studies via database and registry is mentioned by using flow chart source is mentioned below in **Fig-1.**

3.2. Study Characteristics:

Below is a structured **Table-1** summarizing 15 studies (selected for diversity in disease type, geographic region, intervention modality, and multidisciplinary collaboration) on nurse-led interventions for chronic disease management, focusing specifically on multidisciplinary teamwork. Each study is drawn from PubMed-indexed articles published between 2017 and 2025, representing current evidence and approaches.

Table-1, Summary of various 15 studies based on diversity in disease type, geographic region, intervention modality, and multidisciplinary collaboration.

Study (Year)	Country	Chronic Disease	Nurse Intervention	Multidisciplinary Collaboration	Key Outcomes	Ref
(2025)	Global	Multimorbidity	Web, mobile, digital apps	Nurses, digital health teams	↑ Self-management, resource use, QOL	(26)
(2025)	Global	Diabetes, CVD, multimorbidity	Remote digital support	Nurses, tech teams	↓ Resource use, ↑ outcomes, satisfaction	(19)
(2024)	US, Multi	Diabetes, CVD, others	Digital support (mobile/web)	Nurses, technical support teams	↑ Self-management, outcomes, satisfaction	(15)
(2023)	China	Geriatric multimorbidity	Stratified outreach, clinic linkage	Specialist nurses, GPs, hospital teams	Reduced costs, fewer admissions, higher QOL	(12)
(2023)	Iran	Lifestyle-related	Group education, clinics	Nurse educators, specialty clinics	↑ Lifestyle change, metabolic indicators	(25)
(2023)	Canada	Diabetes, CVD, others	Care coordination, group support	Lay leaders, primary care, nurses	↑ Relational continuity, self-management	(18)
(2023)	China	Diabetes (elderly)	Cluster-based community management	Advanced practice nurses, GPs	↑ Glycemic control, knowledge, self-efficacy	(23)
(2022)	Hong Kong	Stroke Rehabilitation	Telerehabilitation (chronic care)	Community nurses, remote therapists	↑ Function, self-management	(14)
(2021)	Iran	ACS, CVD	Counseling, education, person-centered	Cardiology team, nurses	↑ Cardiac self-efficacy	(17)
(2018)	Australia	Lifestyle risk, CVD	Nurse-led lifestyle modification	Primary care teams	Feasible, acceptable interventions	(16)
(2018)	Australia	Hypertension, diabetes	Primary care lifestyle modification	GP, dietitian, nurse	Higher risk factor modification	(20)
(2018)	Australia	Multimorbidity	Nurse-led primary care management	GPs, practice nurses, allied health	↑ Satisfaction, reduced fragmentation	(24)
(2019)	Australia	Multimorbidity	Implementation study, coordinated care	Nurse, clinician, patient	Model improved primary/secondary continuity	(21)
(2019)	Australia	Multimorbidity	Coordinated outpatient care	Multidisciplinary outpatient setting	Improved continuity, care coordination	(13)
(2017)	Netherlands	Various	Self-management, education	Community nurses, multidisciplinary teams	↑ Motivation, ↑ self-efficacy	(22)

DISCUSSION

This systematic review synthesized evidence from fifteen studies of nurse-led interventions in chronic disease management from a wide range of geographic, clinical, and healthcare settings. Interventions ranged from lifestyle change programs and formal disease education to digitally supported remote monitoring and integrated multidisciplinary services and collectively yielded significant improvements in patient outcomes, self-management ability, and healthcare system efficiency. A synthesis of the included studies identified five salient thematic patterns. Initially, incorporating mobile apps, web-based platforms, and telemonitoring into nurse care uniformly enhanced self-management habits, patient satisfaction, and important clinical markers like glycemic control and blood pressure with particular use in reaching remote or limited-resource populations.

Second, lifestyle change and cardiovascular disease risk reduction programs by nurses in primary and community care settings provided quantifiable improvements in metabolic parameters and facilitated long-term health behavior change through evidence-based promotion of physical activity, dietary advice, and counseling. Third, chronic condition-specific education and self-management support programs improved disease-specific knowledge, adherence to treatment, and self-efficacy. Fourth, multidisciplinary coordinated care programs had shown that nurses have a central role in facilitating communication between physicians, allied health professionals, and technical teams with improved continuity of care, less fragmentation of services, and fewer hospital admissions. Variations across the globe and contexts were observed, with evidence ranging from high-income countries like Australia, the USA, and the Netherlands to LMICs like China and Iran, where influences of healthcare infrastructure, training of nurses, and role clarity influenced intervention design and effectiveness.(27)

Through all these themes, the evidence is clear in highlighting nurse-led interventions as a bedrock for high-quality chronic disease care. These strategies not only increase patient activation and self-management but also improve clinical results, decrease avoidable use of the hospital, and increase care satisfaction. Integrating telehealth with other digital advancements widened the scope and scalability of nurse-implemented models, particularly when combined with tailored education and follow-up coordination. The capacity of nurses to move freely among hospital, community, and home care environments, and to serve as an organizing link between disciplines, places them as non-negotiable agents of change in chronic disease control. These results are consistent with existing systematic reviews and meta-analyses showing that nurse-implemented care frequently equates to or surpasses physician-implemented care, primarily because of the patient-centered nature, ongoing monitoring, and flexibility within integrated care streams.

While the evidence is decidedly positive, there are a number of barriers still in place. Inconsistency in nurse training and role definition, restricted access to digital health infrastructure, high pressure of workload, and disintegrated health systems all pose important challenges for implementation. In addition, outcome measure disparities and reporting limit the comparability and integration of findings among studies.(28) Facilitators that have been identified in the evidence are explicitly defined nurse roles in multidisciplinary teams, organized professional development, organizational support for nurse autonomy, investment in strong telehealth infrastructure, and adequate interprofessional communication and patient engagement strategies. At a policy level, proven value of nurse-implemented, multidisciplinary care justifies focused investment in higher education for nurses, with specific emphasis on chronic disease skills and digital health literacy, and on the establishment of interoperable digital platforms. Incentivization of team-based care models and the explicit institutionalization of nurses as focal coordinators in integrated care paths, with standardized outcome measures to facilitate consistent assessment and scalability, should be encouraged by health systems.(29)

Even with the robustness of the evidence base, significant critical research gaps persist. There is a lack of high-quality trials in rural and low-resource environments, which hampers generalizability of existing results. Most studies do not provide detailed reports of nurse roles, responsibilities, and competencies, which impedes replication and focused workforce development. The application of advanced decision-support systems, such as artificial intelligence, within nurse-led care is still underexplored, as is the development of robust frameworks for measuring continuity of care and long-term, patient-focussed outcomes. Filling these knowledge gaps through rigorously conducted, contextually varied research will be critical to maximize the potential of nurse-led chronic disease management and ensure these interventions are equitable, flexible, and sustainable within healthcare systems globally.

CONCLUSION

There is strong evidence from this systematic study that nurse-led treatments are essential to managing chronic illnesses effectively. Nurses provide quantifiable gains in clinical outcomes, patient self-management, happiness, and healthcare efficiency across a variety of locations and illness scenarios. This is especially true when they are part of multidisciplinary teams and have access to digital advances. Nurses are well-positioned to serve as important coordinators of integrated care pathways due to their versatility in hospital, community, and home care settings. Health

systems should place a high priority on funding standardised outcome monitoring, digital health infrastructure, and enhanced nursing training in order to optimise their effect. To guarantee that nurse-led care models are fair, scalable, and sustainable globally, it will be essential to fill up the current research gaps, especially in the areas of role specification, low-resource settings, and the integration of sophisticated decision-support technologies.

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