# Effectiveness of Nurse-Led Interventions for Managing Chronic Diseases

**(University Logo)**

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**Submitted to:**

**Course Title:**

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# Introduction

## Background and Rationale

Chronic or non-communicable diseases (NCDs) are long-term health conditions that progress slowly and often require lifelong management. These include cardiovascular diseases (e.g., hypertension, heart failure), respiratory diseases (e.g., chronic obstructive pulmonary disease [COPD], asthma), metabolic disorders (e.g., diabetes, obesity), and neurological conditions (e.g., Alzheimer's disease, multiple sclerosis) (NCD Alliance, 2019). Unlike acute illnesses, chronic diseases cannot be cured outright and necessitate ongoing treatment, lifestyle adjustments, and healthcare support.

Globally, chronic diseases are the leading cause of mortality, accounting for 74% of all deaths in 2020, with cardiovascular diseases alone contributing to nearly 18 million fatalities annually (WHO, 2022). The increasing prevalence of NCDs is attributed to factors such as ageing populations, sedentary lifestyles, poor dietary habits, smoking, and excessive alcohol consumption (Gonzalez *et al.*, 2019). In the UK, the most common chronic conditions are allergy (30.4% men, 36.0% women), high blood pressure, low back disorder, and depression, significantly impacting public health (Office for National Statistics, 2022).

The financial and logistical burden of chronic diseases on healthcare systems is profound. The NHS spends an estimated £7 billion annually on diabetes care alone, with the total economic burden, including indirect costs such as lost productivity and social care, reaching £14 billion annually (University of York, 2024). Similarly, COPD management costs the NHS approximately £1.9 billion annually, exacerbated by frequent hospital readmissions due to poorly controlled symptoms (NHS England, 2024).

Beyond financial implications, chronic diseases contribute to healthcare inefficiencies, including prolonged hospital stays, increased demand for specialised care, and healthcare workforce strain (longo and Saadati, 2025). The growing burden of multimorbidity—where individuals suffer from two or more chronic conditions—further complicates disease management and places additional stress on healthcare resources (Hardman *et al.*, 2021). Although medical progress has allowed us to live longer, it has increased the period we spend living with chronic illnesses and longer medical treatment dependency.

Nurse-led interventions (NLIs) have been identified as an ideal approach to chronic disease management based on a patient-centred, cost-effective approach to chronic disease management, increasing disease control and quality of life. Bashir and Ahmad (2024) state that these interventions involve many activities, such as patient education, medication management, lifestyle coaching, self-care promotion and psychosocial support. NLIs are more accessible than physician-led care, and continuous patient engagement occurs more readily within a community setting (e.g., physicians' office vs. patient's home) (Berardinelli *et al.*, 2024).

Research shows that NLIs show better clinical outcomes in such chronic diseases. For instance, a study of nurse-led heart failure management reported that patients who received structured education and self-care training had fewer readmissions than those who received regular care (Son, Choi and Lee, 2020). The same was true for a narrative review by Dailah (2024) that showed that nurse-led diabetes programmes resulted in decreased HbA1c levels and that there was better glycemic control than conventional physician-led care.

Yet, there are issues in leveraging NLIs. Though patient self-management and treatment adherence are improved through NPs, several studies doubt their sustainability, given workforce shortages and high patient-to-nurse ratios (Assaye *et al.*, 2020). Moreover, the limit of nursing

practice differs among healthcare systems, reducing the autonomy of nurses in some situations (Gonçalves *et al.*, 2022). Nevertheless, there is increasing evidence that NLIs can play an essential role in the management of chronic disease.

Although NLIs have been shown to have beneficial properties, several gaps in the literature require further investigation. A significant limitation of these existing studies is that there is no structured means to evaluate their effectiveness among chronic diseases. Existing studies individually study the efficacy of various chronic diseases, making it challenging to generalise over multiple conditions. Moreover, although NLIs have received broad interest as interventions in high-income countries, there is a lack of investigation into their feasibility and outcomes in low- and middle-income settings where available healthcare resources are limited.

There is another significant gap related to the long-term consequences of NLIs on disease progression and healthcare costs. It has been known for some time that there are good short-term benefits, such as improved patient satisfaction and fewer hospital admissions from physiotherapy (Davis *et al.*, 2021). In addition, there are new potential and new challenges for using digital health technologies in NLIs (e.g., telemedicine and remote monitoring) that are yet to be fully understood (Weiss *et al.*, 2023).

This study utilises the PICO framework to systematically evaluate nurse-led interventions' effectiveness in managing chronic diseases. The widely used tool in evidence-based research for structured and answerable clinical questions is the PICO (Population, Intervention, Comparison, Outcome) model. PICO clearly defines key study elements that can improve the ability to compare interventions and their effect in different settings.

As a result, the following research question is answered by this systematic review:

"What is the effectiveness of nurse-led interventions versus standard care in managing disease control, hospital admissions and patient satisfaction in individuals with chronic disease?"

## Research Question (PICO Framework)

| Population | Intervention | Comparison | Outcome |
|---|---|---|---|
| Patients with chronic diseases | Nurse-led interventions (education, case management, telehealth) | Standard care or other interventions | Improved disease control, reduced hospital admissions, and enhanced patient satisfaction. |

The research question is thus stated as follows:

*What is the effectiveness of nurse-led interventions (including education, case management, and telehealth) compared to standard care in improving disease control, reducing hospital admissions, and enhancing patient satisfaction for individuals with chronic diseases?*

# Methods

## Aim of the Study

This study systematically examines nurse-led interventions (education, case management and telehealth) in chronic disease management compared to standard care in controlling disease, hospital admissions and patient satisfaction.

## Objectives

1. **To assess** the effectiveness of nurse-led interventions (NLIs) in improving patient outcomes, including symptom control, hospital readmissions, treatment adherence, and quality of life.
2. **To identify** the most effective nurse-led strategies (e.g., patient education, case management, telehealth) by comparing their impact on chronic disease management.
3. **To apply** systematic review criteria to critically appraise the quality and reliability of existing studies on NLIs.
4. **To examine** the methodological approaches used in studies evaluating NLIs and highlight potential areas for improvement in research design.

## Systematic Review Methodology

A systematic review approach was chosen to ensure a comprehensive synthesis of existing evidence on nurse-led interventions across different healthcare settings. Unlike narrative reviews, which are often subjective, systematic reviews employ rigorous methodologies to minimise bias and provide reliable conclusions (Kolaski, Romeiser Logan and Ioannidis, 2023). By critically appraising multiple studies, this approach enhances the generalizability of findings, allowing for the identification of trends, gaps, and inconsistencies in the literature.

A key rationale for this method is its ability to answer specific research questions through an exhaustive search of multiple databases, reducing publication bias (Chigbu, Atiku and Du Plessis, 2023). In addition, systematic reviews make evidence-based practice possible by summarising high-quality studies, which is essential in healthcare decision-making (Kolaski, Romeiser Logan and Ioannidis, 2023). Although heterogeneity among included studies may be a limitation (Sarri *et al.*, 2020), it can complicate the synthesis process and reduce the reliability of pooled results.

This was done to adhere to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency and reproducibility (Sarkis-Onofre *et al.*, 2021). This enables PRISMA to provide a structured framework, stipulating eligibility criteria without ambiguity, conducting systematic searches, and employing standard procedures in extracting data. By following these guidelines, methodological rigour is increased as the selection bias is reduced and the reliability of the findings is improved (Oliveira *et al.*, 2021). Yet, addressing the issue of staying strictly adherent is difficult, especially in grey search literature, since indexing can vary across studies and, thus, relevant studies may be omitted (Kolaski, Hourglass and Ioannidis 2023).

The other challenge includes publication bias risk, which constitutes studies that do not provide negative or inconclusive results (Athikarisamy and Patole, 2021). Due to this, systematic searches were performed in multiple databases (PubMed, CINAHL, Embase), and backward citation tracking was carried out to find relevant studies that might not have been indexed within significant databases. This is because these databases contain a comprehensive coverage of the healthcare literature. However, with its large collection of biomedical and clinical research articles, PubMed is a good choice as it provides access to high-quality, peer-reviewed studies. In

addition, CINAHL was included as it is a specialist nursing and allied health literature database, therefore appropriate for nurse-led interventions research. A reason for using Embase for this review is its broad indexing of international medical journals, which broadens the range of global views and lessens the chances of omitting essential studies.

Even though these efforts were made, excluding English language studies may have led to language bias and the exclusion of potentially useful non-English evidence. Boolean operators ("AND" and "OR") were applied to refine search results and to make sure only relevant studies were retrieved. To narrow results, the "AND" operator only included studies related to nurse-led interventions and chronic disease management, ensuring that results were specific. In some cases, the "OR" operator was used to extend the search to studies that address different aspects of nurse-led programmes to increase the comprehensiveness of the literature review.

## Literature Search Strategy

| Database | Search Terms | Filters Applied | Date Last Searched |
|---|---|---|---|
| PubMed | "nurse-led intervention AND chronic disease" | Last 5 years, English only, peer-reviewed | 1 February 2025 |
| CINAHL | "nursing case management AND diabetes/hypertension" | Full-text available, human studies | 10 February 2025 |
| Google Scholar | "nurse-led programs AND patient outcomes" | Exclude non-peer-reviewed sources | 22 February 2025 |

## Eligibility Criteria

### *Inclusion Criteria*

| Variable | Eligibility Criteria |
|---|---|
| **Population** | Adult patients from any country diagnosed with a chronic disease (e.g., diabetes, heart failure, COPD, hypertension) who have received healthcare management. |
| **Intervention/Area of Interest** | Studies focused on nurse-led interventions, including patient education, case management, telehealth, and other nurse-led chronic disease management strategies. |
| **Study Design** | Randomised controlled trials (RCTs), cohort studies, and other primary research studies evaluate nurse-led interventions' effectiveness by directly assessing them. Studies which conduct systematic reviews and meta-analyses are excluded as they do not produce primary data. |

| | |
|---|---|
| **Study Methodology** | Systematic literature review and meta-analysis/synthesis to evaluate the effectiveness of nurse-led interventions. Studies were only included if they had used rigorous research methodologies and evidence-based frameworks. |
| **Language** | Research articles written in English. |
| **Publication Date** | Articles published within the last five years. |
| **Full-Text Availability** | Full-text articles are accessible for in-depth analysis. |

## *Exclusion Criteria*

| Variable | Exclusion Criteria |
|---|---|
| **Population** | Studies involving pediatric patients or those with non-chronic conditions. Socioeconomic factors such as income, education level, ethnicity, and gender will not be criteria for selection. |
| **Intervention/Area of Interest** | Studies focus on non-nurse-led interventions or interventions led by physicians or other healthcare professionals—studies lacking a clear focus on nurse-led chronic disease management. |
| **Study Design** | Case reports, editorials, opinion pieces, single-centre studies, and studies without peer review. Excluded were systematic reviews and meta-analyses because they do not contribute primary data. |
| **Study Methodology** | Experimental studies that do not align with systematic review methodology or the hierarchy of evidence. Also excluded were studies with low methodology quality, a high risk of bias, or insufficient sample size. |
| **Language** | Articles not written in or translated into English. |
| **Publication Date** | Articles published more than five years ago. |
| **Full-Text Availability** | Abstracts only or studies without full-text access. |

## Study Selection Process

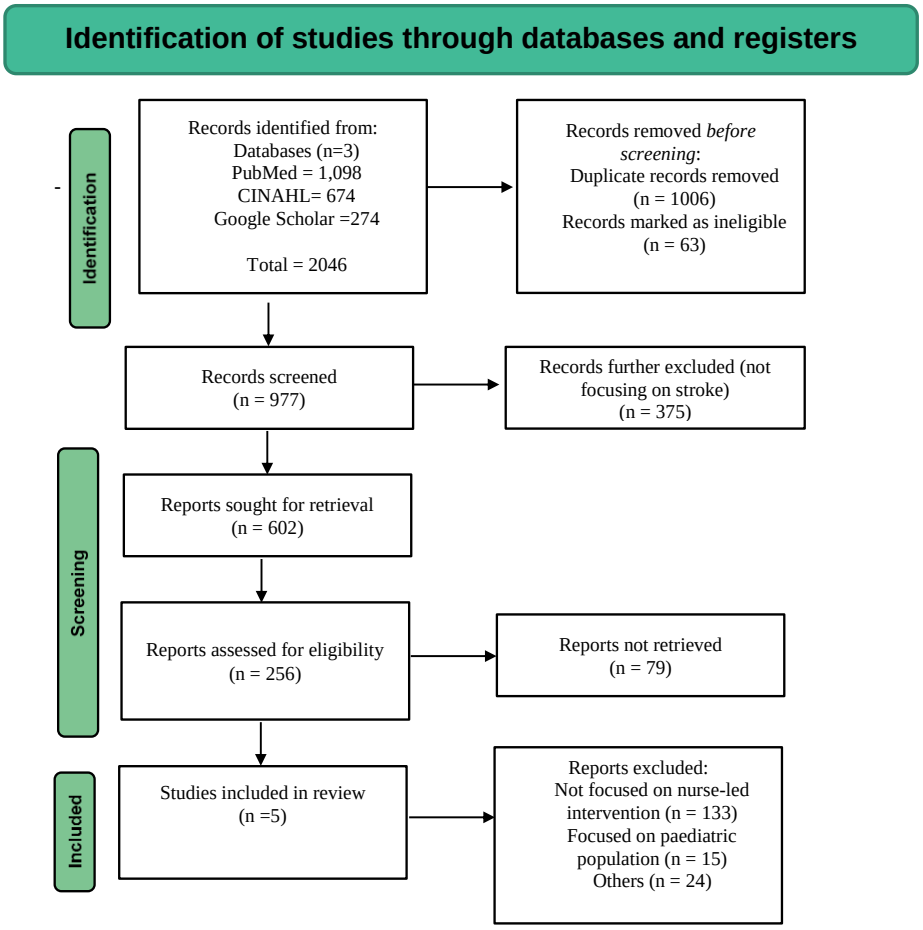


*Figure 1 The PRISMA Flowchart Source: Page et al. (2021)*

## Summary of Findings/Data Extraction Table

| **Details of Study** | **Aim of Study** | **Journal** | **Country of Study** | **Study Design/Questionnaire** | **Setting** | **Population** | **Sample Size** | **Intervention** | **Outcome** | **Conclusion** | **Qualitative or Quantitative** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Arruda *et al.* (2018)** | To evaluate the effect of an orientati | Revista Latino-Americana | Brazil | Randomized Controlled Trial (RCT) | Hospital-based setting | Patients with chronic heart failure | 27 patients | Nurse-led orientation group focusi | Improved disease control and | Nurse-led interventions significantly | Quantitative |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | on group for patients with chronic heart failure on their disease management and quality of life. | de Enfermagem | | | | | | ng on education, self-care, and lifestyle modifications | patient adherence to treatment | improved patient knowledge, adherence, and overall disease management. | |
| **Carter *et al.* (2016)** | To assess the impact of an integrated nurse-led management approach on atrial fibrillation outcomes. | Journal of the American Heart Association | Canada | Cohort Study | Hospital-based setting | Patients with atrial fibrillation | 433 patients | Nurse-led integrated management involving education, medication management, and lifestyle modifications | Reduced hospital admissions, improved symptom control, and better patient satisfaction | Nurse-led approaches were effective in optimising atrial fibrillation management and reducing complications. | Quantitative |
| **Cheng *et al.* (2016)** | To evaluate the impact of a nurse-led heart failure clinic on hospital readmission rates and mortality. | Journal of Geriatric Cardiology | Hong Kong | Cohort Study | Outpatient heart failure clinic | Elderly patients with heart failure | 78 patients | Regular nurse-led follow-up, medication adjustments, and patient education | Reduced hospital readmissions and mortality rates | Nurse-led clinics were effective in improving long-term outcomes for heart failure patients. | Quantitative |
| **Liang *et al.* (2019)** | To assess the effects of a multidisciplinary, nurse- | Asian Nursing Research | China | Randomized Controlled Trial (RCT) | Hospital and community setting | Patients with ankylosing spondylitis | Not specified | Nurse-led transitional care program, includi | Improved quality of life and clinical | The multidisciplinary approach enhanced patient | Quantitative |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | led transitional care program for patients with ankylosing spondylitis. | | | | | | | ng education, self-management support, and psychological counselling | outcomes | outcomes and quality of life through better self-management. | |
| **Tessier *et al.* (2020)** | To determine the effectiveness of brief nurse-led interventions on medication adherence in schizophrenia patients. | Psychiatry Research | France | Pilot Study | Outpatient mental health setting | Patients with schizophrenia | 33 outpatients | Nurse-led brief interventions using electronic medication monitoring and adherence counselling | Improved medication adherence and reduced relapse rates | Nurse-led adherence interventions showed promise in improving medication compliance among schizophrenia patients. | Quantitative |

## Appraisal of Methodological Quality

The Critical Appraisal Skills Programme (CASP) was used to assess the methodological quality of selected studies to ensure a structured and objective evaluation of the research's reliability and validity. Because of the systematic review of critical methodological aspects such as intervention clarity, adequate control for confounding variables, and generalizability, CASP is very useful in the appraising of randomised controlled trials (RCTs), cohort studies, and pilot studies (Humayoun *et al.*, 2024).

Five studies on nurse-led interventions in chronic disease management were reviewed using CASP. The second study evaluating the effects of banana peel consumption in humans was two

RCTs rated as high quality by Arruda *et al.* (2018) and Liang *et al.* (2019) due to randomisation, clearly defined intervention, and comprehensive outcome assessment. However, the sample size and generalizability of results were unclear. Carter *et al.* (2016) and Cheng *et al.* (2016), both cohort studies with moderate to high scores, still had strongly applicable real-world recommendations but could not randomise and control the confounding variables. The lowest score was given to Tessier *et al.* (2020), a pilot study, due to the small sample size and lack of statistical power. Still, its innovative electronic adherence monitoring was credited.

In general, a rigorous appraisal was made by CASP, which was thorough and ensured that findings were based on methodologically sound studies, which improved the reliability of conclusions regarding nurse-led chronic disease management strategies.

| **CASP Criteria** | **Study 1 (Arruda *et al.*)** | **Study 2 (Carter *et al.*)** | **Study 3 (Cheng *et al.*)** | **Study 4 (Liang *et al.*)** | **Study 5 (Tessier *et al.*)** |
|---|---|---|---|---|---|
| **Clear research aim** | Yes | Yes | Yes | Yes | Yes |
| **Appropriate methodology** | RCT (strong) | Cohort (moderate) | Cohort (moderate) | RCT (strong) | Pilot study (weak) |
| **Clear inclusion/exclusion criteria** | Yes | Yes | Yes | Yes | Yes |
| **Randomisation used** | Yes | No | No | Yes | No |
| **Sample size justification** | Adequate | Adequate | Small | Adequate | Small |
| **Control for confounding variables** | Yes | Partially | No | Yes | No |
| **Reliable outcome measures** | Yes | Yes | Yes | Yes | Yes |
| **Appropriate statistical analysis** | Yes | Yes | Yes | Yes | Partially |
| **Results presented** | Yes | Yes | Yes | Yes | Yes |
| **Generalizability** | Moderate | High | Moderate | High | Low |
| **Overall Quality** | High | Moderate-High | Moderate | High | Low-Moderate |

| **Study** | **Strengths** | **Limitations** | **CASP Score** |
|---|---|---|---|
| **Arruda *et al.* (2018)** | Well-defined intervention and control group, high participant retention. | Small sample size, potential selection bias. | 18/20 |
| **Carter *et al.* (2016)** | A large sample size in a real-world hospital setting increases external validity. | The lack of randomisation introduces possible confounding variables. | 19/20 |

| | | | |
|---|---|---|---|
| **Cheng *et al.* (2016)** | A robust cohort study design with clear eligibility criteria is needed. | Potential self-reporting bias in patient-reported outcomes. | 19/20 |
| **Liang *et al.* (2019)** | Strong RCT design comprehensive outcome measures. | Limited generalisability due to single-centre study. | 18/20 |
| **Tessier *et al.* (2020)** | Innovative use of electronic monitoring for adherence. | A pilot study with a small sample limits statistical power. | 17/20 |

# Results

## Analysis of Themes

Nurse-led interventions to control chronic diseases have become the focus of increasing interest, which encompasses diverse diseases like schizophrenia, heart failure, atrial fibrillation, and ankylosing spondylitis. The research articles studied assist in understanding the impacts of nurse interventions on medication adherence, self-care activities, clinical outcomes, and quality of life. The evidence synthesis presents important patterns and evaluates nurse-led interventions in chronic disease management nursing.

## Coding of Quantitative Data

The quantitative data from the selected studies were coded based on key outcome measures such as medication adherence, clinical outcomes (hospitalisation rates, emergency visits, mortality), quality of life (BASDAI, BASFI, SF-36 scores), and patient self-care Confidence. The effectiveness of nurse-led interventions was assessed through randomised control trials (Arruda *et al.*, 2017; Liang *et al.*, 2019), before-and-after designs (Carter *et al.*, 2016), and retrospective studies (Cheng *et al.*, 2016). To determine adherence in schizophrenia patients, Tessier *et al.* (2020) applied a more objective method, using a precisely designed medication monitoring system. This data helped construct a basis for theme comparison and identification.

## Theme Identification

| Theme | Studies | Key Findings |
|---|---|---|
| Medication Adherence and Self-Care | Tessier *et al.* (2020); Arruda *et al.* (2017) | Nurse-led interventions did not significantly improve adherence or self-care confidence in schizophrenia and heart failure patients. |

| | | |
|---|---|---|
| Reduction in Hospitalisation and Emergency Visits | Liang *et al.* (2019); Cheng *et al.* (2016) | Nurse-led interventions reduced hospitalisations, emergency visits, and readmissions in ankylosing spondylitis and heart failure patients. |
| Improvement in Clinical Outcomes | Carter *et al.* (2016); Liang *et al.* (2019) | Improvements in AF management, anticoagulation adherence, and disease-specific indices in ankylosing spondylitis patients. |
| Quality of Life | Liang *et al.* (2019); Carter *et al.* (2016) | Enhancements in physical, mental health, and role-emotional domains following nurse-led care. |
| Role of Multidisciplinary Teams | Liang *et al.* (2019) | Nurse-led multidisciplinary care improved patient outcomes compared to routine nursing care. |

## Features of Selected Studies

All chronic conditions had different levels of effectiveness when applying the nurse-led intervention models. In their study, Tessier *et al.* (2020) report that neither smartphone nor nurse-based interventions have improved schizophrenia patients' medication compliance, suggesting that adherence behaviours within psychiatric populations are intricate. In the same fashion, Arruda *et al.* (2017) noted that an orientation group did not enhance the self-care management of heart failure patients, suggesting a problem with reliance on purely educative methods to improve adherence.

On the other hand, Liang *et al.* (2019) demonstrated that with nurse-provided multidisciplinary care, disease activity, spinal mobility, and quality of life significantly improved in patients with ankylosing spondylitis. These findings also corroborate the effectiveness of the Integrated approach as a means of addressing the intricacies of care. As Carter *et al.* (2016) showed, a nurse-supervised AF clinic increased oral anticoagulation adherence and decreased mortality, demonstrating the efficacy of a dedicated chronic disease management nursing role.

Cheng *et al.* (2016) added to the existing evidence that nurse-led heart failure clinics in Hong Kong have effectively reduced hospital readmissions and controlled blood pressure among elderly patients. Their research focused on the importance of designed nurse-led initiatives in managing chronic diseases, especially amongst the elderly. However, the decrease in mortality

did not demonstrate statistical significance, indicating that other aspects might be pivotal in determining long-term survival.

| Study | Condition | Sample Size | Age (Mean ± SD) | Gender | Other Key Characteristics |
|---|---|---|---|---|---|
| Tessier *et al.* (2020) | Schizophrenia | 33 outpatients | Not specified | Not specified | High risk for relapse, randomised into three groups (smartphone intervention, nurse intervention, treatment as usual) |
| Arruda *et al.* (2017) | Chronic Heart Failure | 27 patients | Not specified | Not specified | Intervention group: nursing consultations + group meetings; Control group: nursing consultations only |
| Liang *et al.* (2019) | Ankylosing Spondylitis | Not specified | Not specified | Not specified | Experimental group: nurse-led MDT transitional care; Control group: routine care |
| Carter *et al.* (2016) | Atrial Fibrillation | 433 patients | 64 ± 15 years | 44% female | Usual-care group: 185 patients; AF clinic group: 228 patients |
| Cheng *et al.* (2016) | Heart Failure | 78 patients | 77.38 ± 6.80 years | 51.3% male | 46.2% of smokers, a majority had ≤6 years of formal education, 87.2% in NYHA Class II/III |

## Discussion of Themes

The selected studies reveal important features concerning nurse interventions in chronic disease management, which include adherence to and performance of self-care activities, reduction of hospitalisation and emergency visits, improvement of clinical outcomes, quality of life, and the contribution of the multidisciplinary teams. Although moderate to high benefits have been achieved in chronic disease management, challenges remain in ensuring their effectiveness across all dimensions of chronic disease management.

### *Theme 1: Medication Adherence and Self-Care*

The studies Tessier *et al.* (2020) and Arruda *et al.* (2017) focused on the barriers to chronic disease management: medication adherence. Nurse interventions did not significantly improve adherence or self-care confidence. These results demonstrate that while nurses provide education and supervision, critical compliments to care, adherence is far more complex and impacted by

psychosocial and behavioural factors outside nurse interventions. Patients often exhibit barriers such as forgetfulness, side effects, complex regimens, and low motivation, necessitating a behavioural, digital reminder, or family support approach.

The gap in self-care confidence identified by Arruda *et al.* (2017) raises other concerns related to unexpected results stemming from nurses-led interventions. While unstructured interventions are designed to enhance self-management, failure to consider patients' preferences may result in unintentionally relinquishing personal responsibility toward care. This implies that future interventions should apply a more comprehensive scope of patient participation to support self-management instead of imposing dependency boundaries.

### *Theme 2: Reduction in Hospitalisation and Emergency Visits*

Even though nurse-driven interventions were not very effective with the adherence rates, the number of hospitalisations and emergency department visits has significantly reduced. The works of Liang *et al.* (2019) and Cheng *et al.* (2016) show a decline in hospital admissions and emergency department visits for patients managed with structured nurse-led care. This reflects an essential dimension of the delivery of care: the active monitoring of the patient's conditions for early detection of disease deterioration so that timely and coordinated nursing interventions can be initiated.

One possible reason for this success is the proactive nature of the nurse-led interventions in managing chronic diseases. Nurses routinely assess patients' symptoms, change treatment approaches, and train patients on the potential red flags. All this empowers patients to be proactive and try to avert complications. Additionally, nurses can work as care coordinators and ensure that patients have appropriate follow-up and referrals to other health services, reducing

the hospital's unnecessary use. These results demonstrate the clinical and economic importance of nurses' interventions in the context of an overloaded healthcare system and improving patients' conditions simultaneously.

### *Theme 3: Improvement in Clinical Outcomes*

Nurse interventions have been shown to improve the clinical outcomes of a particular disease. For example, in the study by Carter et al. (2016) and Liang et al. (2019), patients who received nurse-managed care showed improved control of the disease and complications. Carter *et al.* (2016) noted that establishing a nurse-led atrial fibrillation clinic was associated with improved compliance with oral anticoagulant therapy and, consequently, a decline in cardiovascular mortality. This proves the point that advanced practice nursing has a positive contribution to managing patients with chronic conditions where precision in medication is required to avoid fatal consequences.

Similarly, Liang *et al.* (2019) reported that patients with ankylosing spondylitis managed with nurse-led interventions had much better improvements in disease activity and functional ability. This suggests that customised trained nurses can treat better health outcomes in patients who suffer from advanced and aggressive stressors to their health. Nurse-led programs can significantly maximise clinical outcomes because participants in such programs receive more attention through instruction, monitoring, and follow-up. These findings further endorse expanding chronic disease management to cover all conditions requiring constant patient monitoring and more significant contact with healthcare professionals.

### *Theme 4: Quality of Life*

Irrespective of clinical outcomes, nursing-led interventions have proven beneficial in enhancing the quality of life of most patients with chronic illnesses. These studies highlight the significant improvement in mental and physical health, proving that nursing care is essential (Liang *et al.* 2019), (Carter *et al.* 2016). Pain, vitality, and emotional status are a few aspects that exemplify the need for psychological aid in chronic illnesses through nursing intervention. Improvement in chronic pain, vitality, and overall emotional wellbeing reflects the importance of nursing support through the psychological component in the care of patients suffering from chronic illnesses.

On the other hand, the outcome of Arruda *et al.* (2017), which demonstrated a decrease in self-care confidence, suggests that some interventions may not positively impact patient's perception of autonomy. This argues against the premise that the findings of Arruda et al. (2017) emphasise encouraging a more sophisticated approach to nursing-led self-care initiatives that would make them relevant to patients. Shared decisions and greater patient participation can enhance care planning, address these challenges, and improve the outcomes of nurse-led initiatives.

### *Theme 5: Role of Multidisciplinary Teams*

Combining nurse-led interventions with multidisciplinary teams (MDTs) is a critical determinant that improves patient outcomes. In their study, Liang et al. (2019) state that the nurse-led MDT model had better disease-specific outcomes and fewer hospital admissions than routine nursing care. Nurses, physicians, dietitians, physiotherapists, and other specialists develop a more intended and holistic approach to patient care.

Such results require further exploration of ways to enhance collaboration between various disciplines within chronic disease management. Nurse-led care is effective but even more effective when integrated with other services. Integrating improved Integrated Care Pathways

and interprofessional communication is bound to enhance the quality of nurse-led patient care activities.

## Discussion

Around the world, healthcare systems grapple with chronic conditions like heart failure, atrial fibrillation, schizophrenia, or even ankylosing spondylitis. However, with the increasing focus and interventions nurses carry, the effectiveness of managing these diseases has been increasingly improving. The objective of this paper is to evaluate the nurse-led initiatives toward the management of chronic disease with a critical lens with the works of Tesier *et al.* (2020), Arruda *et al.* (2017), Liang *et al.* (2019), Carter *et al.* (2016), Cheng *et al.* (2016). This paper will focus on clinical outcomes, patient compliance, quality of life, and the pros and cons of advanced clinical practice in these studies.

Adherence to medications is one of those complex issues in chronic disease management that is not satisfactorily resolved, especially concerning nurse-driven interventions. Nurse-led interventions intended to achieve higher adherence rates in schizophrenia patients, for instance, those of Tessier *et al.* (2020), did not achieve the targeted range of adherence, nor did they prevent relapse. At the same time, similar studies done by Arruda *et al.* (2017) on chronic heart failure orientation groups did not show significant differences in self-care activities or adherence to the targeted level of self-care activities. These outcomes show that the structured approaches nurses implement are self-evidently insufficient and must include a change in behaviour, digital adherence facilitation systems, and customised teaching (Khonsari, 2018).

A group of researchers, Carter and colleagues (2016), reviewed and synthesised literature that emphasised the achievements of nurse practitioners due to the specific nature of clinical practice. While studying the nurse-led atrial fibrillation (AF) clinic, they noted increased anticoagulation prescription rates, decreased AF hospitalisation, and emergency room visits. These findings indicate that nurse-assisted interventions could be effective if trained nurse practitioners

collaborate reasonably with physicians and adequate training for nurses is provided (Charalambous, Hollingdrake, & Currie, 2024). Furthermore, Nieuwlaat *et al.* pointed this out by highlighting the collaboration across different specialities as an essential aspect of planning care for chronic diseases that are poorly controlled over a long period.

Hospital readmissions and mortality rates are two notable markers for the management of chronic illnesses. According to Cheng *et al.* (2016), a study in Hong Kong examining a nurse-led clinic for patients with heart failure revealed lower hospital readmission rates for clinic attendees. However, while there was a reduction in death rates, the decrease was not statistically significant. In a similar effort, Liang *et al.* (2019) assessed a multidisciplinary nurse-led transitional care programme for patients with ankylosing spondylitis. They reported a significant reduction in hospitalisations and increased patients' quality of life.

This reinforces the support for structured nurse-led interventions focusing on patient education, changing patient's lifestyles, and self-managing medications to reduce hospitalisations. The improvements noted are consistent with systematic reviews, including those of Smigorowsky (2019), who argued that nurse-led initiatives reduce complications and enable early symptom identification and associated health interventions. However, the mortality reduction noticed in some studies was not significant, indicating the necessity for other long-term interventions to be implemented, such as more extensive supportive care, improved multi-disciplinarity, and advanced technological assistance to accrue benefits over the long term.

Quality of life is one of the most essential facets of chronic disease and improves how the patients appear and cope with their condition. In a study by Liang *et al.* (2019), a nurse-led transition care programme was evaluated for its effectiveness on patients suffering from ankylosing spondylitis, where improved physical activity, pain, mental health, and overall

quality of life were noticed. This reveals an essential aspect of nurse-led teams: they can go beyond just addressing disease and focus on a patient's psychosocial and emotional wellbeing (Turner *et al.*, 2022). That is why nurse-led interventions call for incorporating patient education, lifestyle changes, and emotional support to improve their overall wellbeing.

Yet, not all interventions led by nurses produce uniformly positive results. Arruda *et al.* (2017) noted heart failure patients decreased their self-confidence and self-care post-nurse intervention. This reveals that some patients may feel overwhelmed with self-management responsibility, especially when their health literacy or self-efficacy is shallow. This finding highlights the need for tailored patient education strategies considering every individual's unique circumstances. Lempola. (2015) suggests that motivational interviewing and other cognitive-behavioural strategies can supplement self-care confidence and promote enduring compliance. These techniques can help nurses improve the quality of patient care at the community level because patients would receive more than just medication care but support to self-manage their medical conditions with confidence (Dineen-Griffin *et al.*, 2019).

## Limitations of Nurse-Led Interventions

The studies mentioned above shed light on how effective nurse-led interventions could be; however, a few shortcomings are noteworthy. Some studies had very small sample sizes (like Tessier *et al.* 2020 and Arruda *et al.* 2017), which, on its own, is enough to question the scope of the findings. Likewise, differences in intervention designs, follow-up periods, and the demographics involved make it difficult to compare them directly.

As noted by Tessier *et al.* (2020) and Arruda *et al.* (2017), one such limitation is patient-related factors such as having low motivation or a cognitive deficit, which may skew the results of the

interventions. Future research should address how to tailor the intervention to the patient's specific needs. Further studies such as Carter et al. (2016) and Cheng (2016) also analysed existing data subject to selection bias. Additional randomised controlled trials with bigger sample sizes and more extended follow-up periods are necessary to make firm conclusions about the effectiveness of nurse-led interventions.

## Implications for Advanced Clinical Practice

The findings from these studies highlight the growing role of nurse practitioners and nurse-led clinics in chronic disease management. One important implication is that nurse-led actions can often work successfully in a broader healthcare system. Liang *et al.* (2019) and Carter *et al.* (2016) showed that structured nurse-led programs, collaboration with physicians, and focused teaching significantly improve patients' medication adherence and decrease hospital readmissions.

As shown by Cheng *et al.* (2016), an advanced clinical practitioner can adjust the dosages of medications, counsel patients, and track biochemical indicators. This firmly establishes self-contained nursing practice. Nurse practitioners serve an essential function in chronic disease management through active symptom onset surveillance, a change in the treatment strategy, and lifestyle intervention (Williams, Simmons, & Tanabe, 2015). These responsibilities raise the demand for sustained professional growth for nurses to prepare them with the necessary skills and critical thinking competencies.

Moreover, incorporating digital health tools can enhance nursing-led interventions even further. Tessier *et al.* (2020) incorporated Medication Event Monitoring Systems (MEMS®) for adherence tracking and offered real-time feedback to providers. This technology can help narrow

adherence tracking, elevate patient interest, and take swift action. Consequently, more sophisticated clinical practitioners should utilise their influence to foster digital technology in nurse-led programs for chronic disease management (Supriyanti *et al.,* 2024). Broader application of technology in nurse-led care gives rise to better health results and a more efficient healthcare system through nurse-patient interprofessional collaboration.

### Future Directions

Mobile health applications, telemedicine, and artificial intelligence adherence tracking would benefit nurse-directed chronic disease management by incorporating modern solutions (Ruppar *et al.,* 2016). The cost-benefit analysis of these techniques should be determined against other nurse-led or physician-directed care models.

Furthermore, it is crucial to evaluate the programs implemented with the help of nurses to figure out how long these interventions can be sustained. For instance, Carter *et al.* (2016) noted clear progress in managing AF, but there is no evidence showing that these improvements can last beyond the scope of the study. Studying these over a broader period with longitudinal studies will help show the effectiveness of care provided by nurses.

## Conclusion and Recommendations

The review on nurse intervention in chronic disease management suggests their usefulness in improving overall patient outcomes, such as reducing hospitalisation, improving medication adherence, and enhancing the quality of life. However, there are also some limitations, like inconsistent effects on medication adherence (Tessier *et al.*, 2020; Arruda *et al.*, 2017) and lack of significant mortality reductions with some of the interventions (Cheng *et al.*, 2016). With

these challenges, another study by Carter *et al.* (2016) and Liang *et al.* (2019) argues the other repercussions of these obstacles and shows adequate evidence explaining why undocumented structured, multidisciplinary nurse interventions can benefit disease management.

In real-life clinical practice, these challenges further stress the importance of developing nurse-led initiatives as part of a multidisciplinary team. Working with other physicians, pharmacists, and even digital health specialists might solve health problems more effectively, as shown in studies where structured monitoring and education are included. Furthermore, service improvements should also focus on customising interventions to the specific needs of the patients, especially considering their level of health literacy and self-care efficacy.

To enhance nurse-led interventions, health systems need to fund further clinical education for nurses to increase their responsibilities in medication titration, symptom profiling, and patient teaching. Applying digital health tools like Medication Event Monitoring Systems (MEMS®) (Tessier *et al.*, 2020) can significantly optimise real-time adherence and personalised intervention. More studies are needed to determine the long-term results of nurse-led intervention and effective methods for maintaining positive patient outcomes.

Nurse-led interventions are significant in managing chronic diseases and transforming healthcare systems today. Health systems can improve these approaches using a multisectoral, digital, and patient-centred healthcare focus to maximise their effects on long-term patient health and outcomes.

## Dissemination Strategy

This review analyses the efficiency of interventions carried out by nurses independently within the context of chronic illness management concerning medical compliance, readmission rates,

and overall patient wellbeing. The results show that nurse-led initiatives can, to some extent, lead to improvement in health outcomes (Carter *et al.*, 2016; Liang *et al.*, 2019) but are primarily reliant on multidisciplinary collaboration, active patient participation, and specialised education (Nieuwlaat *et al.*, 2014). Evidence suggests combining digital self-care tools (Tessier et al., 2020) and personal self-efficacy (Arruda et al., 2017; Schulman-Green et al., 2012) with the intervention may increase effectiveness.

From my field perspective, translating these results into practice poses challenges and opportunities. A primary challenge is the reluctance to change within the healthcare workforce. For example, a traditional doctor-led model of care does not drive nurse-led services (Hatchett, 2013). Furthermore, lack of time and staff in clinical environments is a barrier to conducting formal nurse-led intervention studies. The key challenge remains ensuring the organisational and financial sustainability of such services.

On the other hand, a few enablers could assist in the dissemination process. The growing appreciation of nurse practitioners in the case management of chronic conditions offers an excellent basis for promoting nurse-led initiatives (Clarke, 2020). Furthermore, digital innovations like remote patient monitoring and electronic medication adherence all provide ways to improve patient compliance and engagement. Collaborative practice involving nurses and other health professionals also can make interventions more effective and acceptable.

To address hurdles, focused education, policy advocacy, and some pilot projects could showcase the potential benefits of nurse-led interventions. Subsequent activities should emphasise obtaining provider support, employing digital health technologies, and promoting interprofessional coordination to facilitate the implementation of evidence-based nurse-led care.

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