

## Original Article

# Effectiveness of Nurse-Led Motivational Interviewing on Self-Management and Self-Care in Patients with Chronic Diseases: A Systematic Review of Randomized Controlled Trials

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## Abstract

**Background:** Chronic diseases impose a significant burden on health systems. Self-management, including self-care behaviors, plays a key role in their control. Motivational interviewing (MI) is an evidence-based approach used by nurses to enhance intrinsic motivation and facilitate behavior change in patients with chronic conditions. However, no comprehensive systematic review has specifically synthesized the effectiveness of nurse-led MI on self-management and self-care in chronic diseases.

**Objectives:** This systematic review aimed to assess and synthesize evidence from randomized trials on the effectiveness of nurse-led MI in improving self-management and self-care among patients with chronic diseases.

**Methods:** A systematic search was conducted in PubMed, Scopus, Web of Science, and Google Scholar up to June 2026. Randomized trials that provided a nurse-led MI intervention and reported self-management or self-care outcomes were included. Risk of bias was assessed using the RoB 2 tool. Due to significant heterogeneity in the intervention types, study populations, and outcome measures, meta-analysis was not feasible; findings are therefore reported as a narrative synthesis.

**Results:** Of 423 records identified, 16 RCTs with 2805 participants were included. Fourteen studies (87.5%) reported statistically significant improvements in at least one self-management or self-care outcome favoring the intervention group. The most consistent evidence was observed in patients with heart failure and type 2 diabetes. Interventions comprising four or more sessions with a follow-up of at least six months were associated with the greatest improvements. Six studies were rated at low risk of bias, while ten had some concerns.

**Conclusion:** Current evidence suggests that nurse-led MI may enhance self-management and self-care behaviors in certain chronic diseases, particularly heart failure and type 2 diabetes. However, variability in interventions and outcomes, along with methodological limitations in some studies, reduces the certainty of this evidence. Rigorous randomized trials with standardized designs and extended follow-up periods are needed to strengthen the evidence base.

### Implications for Nursing and Midwifery Preventive Care

- Nurse-led MI can improve self-care and self-management among patients with chronic diseases within the context of secondary preventive care.
- Integrating this approach into nursing follow-up programs, alongside proper implementation and ongoing monitoring, can support the maintenance of health-oriented behaviors and help prevent adverse disease outcomes.



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## Introduction

Chronic non-communicable diseases represent a major global health challenge, exerting a substantial burden on patients, families, and healthcare systems [1, 2].

These diseases account for over 70% of global mortality and are linked to disability, diminished quality of life and life expectancy, as well as heightened utilization of health services [3, 4]. Although therapeutic advancements have been made, effective management of chronic diseases relies not solely on pharmacological interventions. The active involvement of patients in managing their conditions is crucial for enhancing treatment outcomes.

Therefore, self-management and self-care are considered fundamental components of chronic disease management, given their association with preventing disease progression, improving quality of life, and optimizing health outcomes [5–7].

Self-care refers to the ability of patients, families, and communities to maintain and promote health, prevent disease, manage health conditions, and adapt to illness or disabilities [8, 9]. As a core component of self-care, self-management is generally viewed as an ongoing dynamic process in which patients take an active role in managing their health. This process includes managing symptoms, adhering to treatment, coping with the physical and psychological consequences of illness, and making lifestyle changes to support long-term health and well-being [8]. Although self-care and self-management are conceptually distinct, both are important for the effective management of chronic diseases. Evidence suggests that both are associated with better treatment adherence, improved symptom control, lower rates of hospital readmission, reduced health care costs, and improved quality of life [10, 11]. Despite these well-recognized benefits, many patients continue to experience difficulties in maintaining self-management and self-care behaviors and adhering to the recommended treatment regimens [12]. These challenges may be influenced by a range of factors, including the complexity of treatment regimens, limited health literacy, socioeconomic barriers, inadequate support,

and low motivation to engage in behavioral changes [12, 13]. Consequently, education alone may not be sufficient to facilitate sustained behavioral changes. Interventions that enhance patients' intrinsic motivation may therefore offer a more effective approach to supporting self-management and self-care behaviors [14].

Among behavioral interventions, motivational interviewing (MI) is increasingly recognized as a promising approach to promote self-management and self-care among patients with chronic diseases [15–18].

MI is a collaborative, patient-centered, goal-oriented counseling approach designed to facilitate behavioral change by resolving ambivalence, strengthening intrinsic motivation, and enhancing self-efficacy [14, 19]. This is based on the premise that a stronger commitment to change may increase the likelihood of initiating and sustaining health-promoting behavior [20]. Effective chronic disease management requires the active involvement of patients, families, and healthcare professionals, particularly nurses, in supporting self-management and self-care [21]. Nurses play an important role in supporting self-management, promoting treatment adherence, and empowering patients to take an active role in managing their conditions through ongoing interactions with patients and an understanding of their clinical needs and the factors that influence behavioral change [22, 23].

As enhancing self-management and self-care remains a key goal of preventive care for patients with chronic diseases, nurse-led MI may offer a valuable approach to support patients' active participation in their care and improve these outcomes [21–23].

Although several systematic reviews and meta-analyses have examined the effectiveness of MI for chronic conditions such as heart failure, diabetes, and hypertension [16, 24], most have focused on a single disease or evaluated interventions delivered by different healthcare professionals without distinguishing nurses' specific contributions to the intervention. In addition, existing studies vary

considerably in terms of intervention characteristics, study populations, and outcomes.

The publication of additional randomized controlled trials highlights the need to update current evidence. Therefore, a comprehensive synthesis of the evidence specifically evaluating the effectiveness of nurse-led MI across a broad range of chronic diseases is needed. To the best of our knowledge, no published systematic review has specifically evaluated the effectiveness of nurse-led MI across a broad range of chronic diseases based exclusively on randomized controlled trials while simultaneously focusing on both self-management and self-care outcomes.

## Objectives

This systematic review aimed to synthesize and evaluate evidence from randomized controlled trials on the effectiveness of nurse-led MI interventions in improving self-management and self-care behaviors among patients with chronic diseases. This review also aimed to characterize the key features of these interventions, including their mode of delivery, duration, and implementation.

## Methods

### Protocol registration and reporting guideline

This systematic review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) statement to ensure transparency and rigor. Before the literature search was initiated, a prespecified protocol was developed outlining the review question, eligibility criteria, search strategy, study selection process, data extraction procedures, and data synthesis methods, thereby minimizing the risk of bias associated with post-hoc methodological decisions. The review protocol was finalized before the study commenced, and all review procedures were conducted according to the protocol. This systematic review was registered in PROSPERO (CRD420261434305).

The eligibility criteria were defined in accordance with the Population, Intervention, Comparison, Outcomes, and Study design (PICOS) framework. The study population consisted of adults (aged  $\geq 18$

years) with chronic diseases. Eligible studies focused on nurse-led MI interventions, regardless of the delivery mode (e.g., face-to-face, telephone-based, online, or blended), provided that nurses played the primary role in delivering or leading the intervention. Comparator groups included usual care, standard care, and interventions that did not incorporate MI. The primary outcomes of interest were self-management and self-care among patients with chronic diseases. Studies were included if these outcomes were assessed using validated psychometric instruments or well-established structured behavioral measures. Only randomized controlled trials (RCTs) were considered. Excluded from the analysis were observational studies, qualitative studies, quasi-experimental studies, review articles, study protocols, case reports, conference abstracts, and letters to the editor.

### Search Strategy

A thorough literature search was performed to identify all eligible studies in PubMed, Scopus, and Web of Science from the inception of these databases until June 27, 2026. To ensure exhaustive coverage of the available evidence, supplementary searches were performed in Google Scholar, ProQuest Dissertations & Theses Global, and the Persian databases SID, Magiran, IranDoc, and Civilica to locate potentially relevant grey literature. The search strategy was structured around three primary concepts: motivational interviewing, self-management/self-care, and chronic diseases. For each concept, a combination of controlled vocabulary (Medical Subject Headings [MeSH], where applicable) and free-text terms was used, with the search strategy tailored to each database's indexing system and search functionality. The search terms were integrated using the Boolean operators AND and OR. To enhance search sensitivity, the strategy was refined following preliminary scoping searches. Alongside broad terms associated with chronic diseases, specific terms for prevalent chronic conditions, such as diabetes, hypertension, heart failure, stroke, chronic obstructive pulmonary disease, chronic kidney disease, and HIV/AIDS, were included. The comprehensive search strategies

were customized to meet the specific requirements of each database and are detailed in [Appendix 1](#) of the manuscript.

### Study Selection

All records retrieved from the electronic database searches were imported into EndNote 25 (Clarivate Analytics) for reference management. After duplicate records were identified and removed, the remaining records underwent a two-stage screening process conducted independently by two reviewers. During the first stage, titles and abstracts were screened against the predefined eligibility criteria. Full-text articles deemed potentially eligible were subsequently assessed for inclusion. Any disagreements between the reviewers were resolved through discussion and consensus. When consensus could not be reached, a third reviewer made the final decision. Studies published in English or Persian were considered eligible for inclusion.

A total of 391 records were identified through database searches (PubMed: 140, Scopus: 158, and Web of Science: 93 records). After removing 70 duplicate records, 321 records remained for title and abstract screening. Of these, 270 records were excluded for not meeting the eligibility criteria, leaving 51 records for further assessment. Following the screening process, 16 studies were considered potentially eligible for full-text review. Of these, eight studies were excluded after full-text assessment for not meeting the eligibility criteria, leaving eight eligible for inclusion in the electronic database search. Supplementary manual searches were also undertaken to enhance the comprehensiveness of the review. A total of 32 additional records were identified through Google Scholar and by screening the reference lists of relevant articles. After title, abstract, and full-text screening, eight additional studies met the eligibility criteria and were included in the review. ProQuest Dissertations & Theses Global was also searched to identify dissertations and other grey literature; however, no eligible records were identified. Similarly, searches of the Persian databases SID, Magiran, IranDoc, and Civilica did not identify any additional eligible studies. Finally, 16 studies were

included in this systematic review. The study selection process is presented in the PRISMA 2020 flow diagram [\[Figure 1\]](#) [\[25\]](#).

### Data Extraction

Data were extracted using a standardized extraction form developed a priori, aligned with the Cochrane Handbook for Systematic Reviews of Interventions [\[26\]](#). This form underwent pilot testing in two included studies, leading to minor modifications to enhance the consistency and comprehensiveness of data collection. Two reviewers independently extracted the data from all the included studies. The extracted data were categorized into four primary domains: (1) study characteristics, encompassing author, publication year, country, and study design; (2) participant and clinical characteristics, including sample size and type of chronic disease; (3) intervention and comparator characteristics, detailing the approach for delivering MI, number and duration of sessions, mode of delivery, and characteristics of the comparison group; and (4) outcome-related information, covering measurement instruments, follow-up duration, and outcomes related to self-management and self-care. Any discrepancies identified during the extraction process were resolved through discussion and consensus between the reviewers after re-examination of relevant articles. When agreement could not be reached, a third reviewer was consulted to resolve discrepancies [\[Table 2\]](#).

### Quality/ Risk of Bias Assessment Tools

The methodological quality and risk of bias of the included studies were independently assessed by two reviewers using the Cochrane Risk of Bias 2 (RoB 2) tool [\[27\]](#).

This tool evaluates the risk of bias across five domains: randomization process, deviations from the intended interventions, missing outcome data, measurement of the outcome, and selection of the reported result.

For each domain, studies were judged as having low risk of bias, some concerns, or high risk of bias, in accordance with the RoB 2 guidance. Any disagreements between the reviewers were resolved

through discussion and consensus-building. When consensus could not be reached, a third reviewer was consulted to resolve disagreements. The results of the risk of bias assessment are presented in both tabular and graphical formats according to the Cochrane recommendations, providing a transparent overview of the methodological quality of the included studies [Table 2].

### Synthesis Methods

Given the substantial clinical and methodological heterogeneity among the included studies with respect to participant characteristics, chronic disease type, intervention structure and intensity, number of sessions, follow-up duration, and outcome measurement instruments, conducting a meta-analysis and, consequently, a formal assessment of publication bias (e.g., funnel plots or Egger's test) was not considered appropriate.

Therefore, the data were synthesized narratively in this review.

To facilitate narrative synthesis, the included studies were categorized according to participant characteristics, disease type, characteristics of the MI intervention, comparator group, outcome measurement instruments, and primary outcomes of self-management and self-care. The findings were systematically compared and synthesized to identify overall patterns in the intervention's effectiveness. The results were reported descriptively, with attention given to both consistency and discrepancies across the included studies. Throughout the review, synthesis primarily focused on self-management and self-care outcomes.

## Result

### Study Characteristics

A total of 16 randomized controlled trials (RCTs) published between 2010 and 2025 were included in this systematic review, comprising 2,805 participants.

The studies were conducted among patients with heart failure ( $n = 7$ ), type 2 diabetes ( $n = 4$ ), chronic obstructive pulmonary disease ( $n = 2$ ), chronic kidney disease ( $n = 2$ ), and multimorbidity ( $n = 1$ ).

Two studies were derived from the MOTIVATE-HF trial and evaluated the effectiveness of the intervention among patients with heart failure and their family caregivers, respectively [28, 29]. All interventions were based on the principles of MI and were delivered by nurses.

The mode of intervention delivery (face-to-face, telephone-based, online, or blended), number of sessions (ranging from 1 to 8), and follow-up duration (ranging from 4 weeks to 12 months) varied across studies. In some studies, MI was delivered as a standalone intervention, whereas in others it was combined with complementary approaches, such as education, counseling, psychological empowerment, or self-management support. The primary outcomes, self-management and self-care, were evaluated using both disease-specific and generic instruments. Significant heterogeneity was noted among the studies concerning participant and intervention characteristics, outcome measurement tools, and the reporting of findings. Table 1 provides a detailed overview of the characteristics of the included studies.

### Methodological Quality of the Included Studies

The risk of bias was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool. Of the 16 included studies, six (37.5%) were classified as having a low risk of bias, while 10 (62.5%) were rated as having some concerns.

None of the included studies were classified as having a high risk of bias.

The most common methodological concerns were identified in the measurement of the outcome domain (Domain 4), with most studies judged to have some concerns. In the randomization process domain (Domain 1), several studies were rated as having some concerns, whereas the remaining domains were predominantly judged to have a low risk of bias.

Overall, all included studies were classified as having either a low risk of bias or some concerns, suggesting an overall acceptable level of methodological quality. The detailed results of the risk of bias assessment are presented in Table 2.

**Table 1.** Characteristics of the Included Randomized Controlled Trials on Motivational Interviewing for Self-Management/Self-Care in Chronic Disease

| First Author, Year   | Place  | Population                                | Age (years)  | Sample size (n)     |                |                    |               | Diagnostic tool               | Mean (SD)               |                                   |                         |                                      | Follow-up | Intervention                                                                                              |
|----------------------|--------|-------------------------------------------|--------------|---------------------|----------------|--------------------|---------------|-------------------------------|-------------------------|-----------------------------------|-------------------------|--------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------|
|                      |        |                                           |              | Before Intervention | Before Control | After Intervention | After Control |                               | Intervention (Before)   | Intervention (After)              | Control (Before)        | Control (After)                      |           |                                                                                                           |
| Locatelli, 2022 (40) | Italy  | Caregivers of patients with heart failure | 55           | 332                 | 178            | 153                | 82            | CC-SCHFI                      | 54.8±19                 | 60±21                             | 48.1±19.7               | 57.1±20                              | 12 months | Motivational interviewing (1 face-to-face session + 3 telephone contacts)                                 |
| Nolan, 2021 (41)     | Canada | Patients with chronic heart failure (CHF) | 59.5         | 117                 | 114            | 98                 | 101           | Total CHF self-care behaviors | Median (IQR): 11 (8-12) | Adjusted OR=2.4 (95% CI: 1.4-4.2) | Median (IQR): 10 (8-12) | Same adjusted between-group estimate | 12 months | Automated internet-based e-counseling using motivational interviewing and cognitive behavioral strategies |
| Paradis, 2010 (42)   | Canada | Patients with heart failure (HF)          | 55.39 (7.72) | 15                  | 15             | 15                 | 15            | EHFScBS                       | 61.1±11.6               | 56.88±10.94                       | 49.99±14.80             | 47.55±14.07                          | 1 month   | Motivational Interviewing based on the Stages of Change (MISC); 1 face-to-face + 2 telephone sessions     |
| Vellone, 2020 (43)   | Italy  | Patients with heart failure (HF)          | 55           | 332                 | 178            | 165                | 73            | SCHFI                         | 44.90±20.13             | NR (Δ reported only)              | 45.38±20.14             | NR (Δ reported only)                 | 12 months | Motivational interviewing; 1 face-to-face session + 3 telephone follow-ups (patient + caregiver)          |
| İşleyen, 2025 (44)   | Turkey | Patients with type 2 diabetes             | 55.38 (7.69) | 36                  | 34             | 36                 | 34            | DSMS                          | 25.44±6.5               | 32.75±5.57                        | 23.32±7.27              | 26.11±9                              | 6 months  | Tele-nursing-based Motivational                                                                           |

|                                 |        | s<br>(T2DM<br>)                                                |                  |     |     |     |     |                                                                                                      |                                            |                                         |                                                     |                                       |             | onal<br>Intervie<br>wing; 8<br>telephon<br>e<br>sessions<br>Nurse-<br>led<br>motivati<br>onal<br>intervie<br>wing; 4<br>face-to-<br>face<br>sessions<br>(15–20<br>min/sess<br>ion)       |
|---------------------------------|--------|----------------------------------------------------------------|------------------|-----|-----|-----|-----|------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------|---------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dogru,<br>2019<br>(45)          | Turkey | Patient<br>s with<br>type 2<br>diabete<br>s<br>(T2DM<br>)      | 45 or<br>more    | 30  | 30  | 30  | 30  | PDSM<br>S                                                                                            | 17.1±<br>5.6                               | 35±4.1                                  | 21.7±<br>3.3                                        | 16.5±2<br>.6                          | NR          | Nurse-<br>led<br>motivati<br>onal<br>intervie<br>wing; 4<br>face-to-<br>face<br>sessions<br>(15–20<br>min/sess<br>ion)                                                                   |
| Song<br>,<br>2014<br>(46)       | Korea  | Elderly<br>patients<br>with<br>COPD                            | 67.4<br>(6.8)    | 20  | 20  | 20  | 20  | Medic<br>ation<br>Compl<br>iance<br>Questi<br>onnair<br>e +<br>Exerci<br>se<br>Compl<br>iance<br>Log | Med<br>30.4±<br>4.8 /<br>Ex<br>3.7±1.<br>4 | Med<br>31.9±4<br>.8 / Ex<br>3.6±1.<br>5 | Med<br>31.6±<br>3.4 /<br>Ex<br>4.6±1.<br>4          | Med<br>33±3.2<br>/ Ex<br>10.5±1<br>.9 | 2<br>month  | MI-<br>based<br>educatio<br>nal<br>intervent<br>ion: 6<br>sessions,<br>each<br>session<br>lasting 1<br>hour                                                                              |
| Cui,<br>2025<br>(47)            | China  | Patient<br>s with<br>early-<br>stage<br>CKD<br>(stages<br>1–3) | 42.76(<br>10.59) | 35  | 35  | 33  | 31  | CKD-<br>SMBS                                                                                         | 84.26<br>±5.86                             | 106.67<br>±1.32                         | 82.89<br>±20.9<br>3                                 | 74.26±<br>5.76                        | 4<br>week   | Nurse-<br>led<br>Psychol<br>ogical<br>Empowe<br>rment-<br>Based<br>Motivati<br>onal<br>Intervie<br>wing<br>Program<br>(4 MI +<br>4<br>consolid<br>ation<br>sessions<br>over 12<br>weeks) |
| Della<br>fiore,<br>2023<br>(48) | Italy  | Patient<br>s with<br>heart<br>failure<br>(HF)                  | 69.64(<br>11.03) | 121 | 61  | 121 | 61  | SCHFI                                                                                                | NR<br>(Medi<br>an<br>46.66)                | NR                                      | Media<br>n<br>46.66<br>(IQR<br>36.67<br>–<br>56.66) | NR                                    | 12<br>month | Nurse-<br>led<br>Motivati<br>onal<br>Intervie<br>wing for<br>patients<br>(Arm 1)                                                                                                         |
| Chen<br>,<br>2018<br>(49)       | China  | Patient<br>s with<br>CHF                                       | 59.94(<br>6.93)  | 35  | 37  | 29  | 33  | SCHFI                                                                                                | 79±48<br>.80                               | 155.13<br>±35.65                        | 88.68<br>±29.2<br>6                                 | 115.44<br>±22.82                      | 2<br>month  | MI-<br>based<br>educatio<br>nal<br>intervent<br>ion: 6<br>sessions,<br>each<br>session<br>lasting 2<br>hours                                                                             |
| Chen<br>,<br>2012<br>(50)       | Taiwan | Adults<br>with<br>type 2<br>diabete<br>s                       | 58.92(<br>10.22) | 125 | 125 | 104 | 110 | DSMS<br>(DSMI<br>)                                                                                   | Mean<br>±SD<br>NR                          | Mean±<br>SD<br>NR                       | Mean<br>±SD<br>NR                                   | Mean±<br>SD<br>NR                     | 3<br>month  | MI-<br>based<br>educatio<br>nal<br>intervent<br>ion: 6                                                                                                                                   |

|                                   |        |                                                    |              |     |     |     |     |                                           |                                                                          |                     |                                                                           |                     |           |                                                                                                                                                |
|-----------------------------------|--------|----------------------------------------------------|--------------|-----|-----|-----|-----|-------------------------------------------|--------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------|---------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Masterson Creber et al. 2015 (51) | USA    | Adults with CHF                                    | 62 (13.4)    | 70  | 30  | 41  | 26  | SCHFIV6.2                                 | Mean $\pm$ SD<br>NR                                                      | Mean $\pm$ SD<br>NR | Mean $\pm$ SD<br>NR                                                       | Mean $\pm$ SD<br>NR | 90 days   | sessions, each session lasting 1.5 hours<br>Nurse-led Motivational Interviewing (1 home visit + 3–4 telephone follow-up sessions over 90 days) |
| Zuo, 2022 (52)                    | China  | Adults on maintenance hemodialysis with fatigue    | 56.39(15.95) | 62  | 56  | 60  | 54  | Overall Behavioural Self-management Scale | 61.13 $\pm$ 10.98                                                        | NR                  | 60.56 $\pm$ 10.22                                                         | NR                  | 6 months  | Nurse-led multidisciplinary non-pharmacological intervention (MI + walking + behavioral self-management education)                             |
| Holmen, 2014 (53)                 | Norway | Adults with type 2 diabetes                        | 57.3(12.1)   | 101 | 50  | 81  | 41  | heiQ                                      | Baseline 2.89 $\rightarrow$ 1-yr 3.08 ( $\Delta$ +0.19, 95%CI 0.05–0.33) | —                   | Baseline 2.95 $\rightarrow$ 1-yr 2.94 ( $\Delta$ –0.01, 95%CI –0.14–0.13) | —                   | 12 months | Few Touch Application + Health Counseling (MI)                                                                                                 |
| Fortin, 2021 (54)                 | Canada | Adults with multimorbidity (>3 chronic conditions) | 60.95(10.45) | 144 | 140 | 127 | 118 | heiQ                                      | 3.45 $\pm$ 0.51                                                          | 3.61 $\pm$ 0.5      | 3.44 $\pm$ 0.53                                                           | 3.52 $\pm$ 0.51     | 4 months  | Patient-centered interdisciplinary care + motivational interviewing + self-management support                                                  |
| Borge, 2024 (55)                  | Norway | Patients with COPD                                 | 69.3(10.8)   | 64  | 63  | 64  | 63  | heiQ                                      | Intervention MD= 0.3 (95%CI –0.5 to –0.1);                               | —                   | Control MD= –0.12 (95%CI 0.1–0.3)                                         | —                   | 12 months | MI-trained COPD nurses + tailored health literacy follow-up                                                                                    |

Cohen's  
d=-0.35  
(95%  
CI  
-0.50  
to  
-0.03  
),  
favoring  
interv  
ention  
(home  
visit +  
telephon  
e  
follow-  
up)

**Note1.** HF = heart failure; T2DM = type 2 diabetes mellitus; COPD = chronic obstructive pulmonary disease; CKD = chronic kidney disease; SCHFI = Self-Care of Heart Failure Index; CC-SCHFI = Caregiver Contribution to SCHFI; EHFSBS = European Heart Failure Self-care Behaviour Scale; DSMS = Diabetes Self-Management Scale; PDSMS = Perceived Diabetes Self-Management Scale; CKD-SMBS = CKD Self-Management Behavior Scale; heiQ = Health Education Impact Questionnaire; NR = not reported; Δ = change score.

**Table 2.** Methodological Quality Assessment of the Included Randomized Controlled Trials Using the Cochrane Risk of Bias 2 (RoB 2) Tool

| Study (First author, year)    | D1: Randomization Process | D2: Deviations from Intended Interventions | D3: Missing Outcome Data | D4: Measurement of the Outcome | D5: Selection of the Reported Result | Overall Risk of Bias |
|-------------------------------|---------------------------|--------------------------------------------|--------------------------|--------------------------------|--------------------------------------|----------------------|
| Chen et al., 2012             | Some concerns             | Low                                        | Some concerns            | Low                            | Some concerns                        | Some concerns        |
| Chen et al., 2018             | Some concerns             | Some concerns                              | Low                      | Some concerns                  | Some concerns                        | Some concerns        |
| Cui et al, 2025               | Low                       | Low                                        | Low                      | Some concerns                  | Some concerns                        | Some concerns        |
| Dellafiore et al., 2023       | Low                       | Low                                        | Low                      | Some concerns                  | Low                                  | Low                  |
| Dogru et al, 2019             | Some concerns             | Low                                        | Low                      | Some concerns                  | Some concerns                        | Some concerns        |
| Isleyen et al., 2025          | Low                       | Low                                        | Low                      | Some concerns                  | Low                                  | Low                  |
| Locatelli et al, 2022         | Low                       | Low                                        | Some concerns            | Some concerns                  | Low                                  | Some concerns        |
| Masterson Creber et al., 2015 | Low                       | Low                                        | Low                      | Low                            | Low                                  | Low                  |
| Nolan et al, 2021             | Low                       | Low                                        | Low                      | Some concerns                  | Low                                  | Low                  |
| Paradis et al., 2010          | Some concerns             | Low                                        | Low                      | Some concerns                  | Some concerns                        | Some concerns        |
| Song et al., 2014             | Some concerns             | Low                                        | Low                      | Some concerns                  | Some concerns                        | Some concerns        |
| Vellone et al., 2020          | Low                       | Low                                        | Some concerns            | Some concerns                  | Low                                  | Some concerns        |
| Zuo et al, 2022               | Some concerns             | Low                                        | Low                      | Some concerns                  | Low                                  | Some concerns        |
| Holmen et al, 2014            | Low                       | Low                                        | Low                      | Some concerns                  | Low                                  | Low                  |
| Fortin et al., 2021           | Some concerns             | Low                                        | Low                      | Some concerns                  | Low                                  | Some concerns        |
| Borge et al, 2024             | Low                       | Low                                        | Low                      | Some concerns                  | Low                                  | Low                  |

**Note 2.** Outcome data are presented in the format reported by the original studies (e.g., mean ± SD, median [IQR], change score, OR with 95% CI, or other effect estimates).

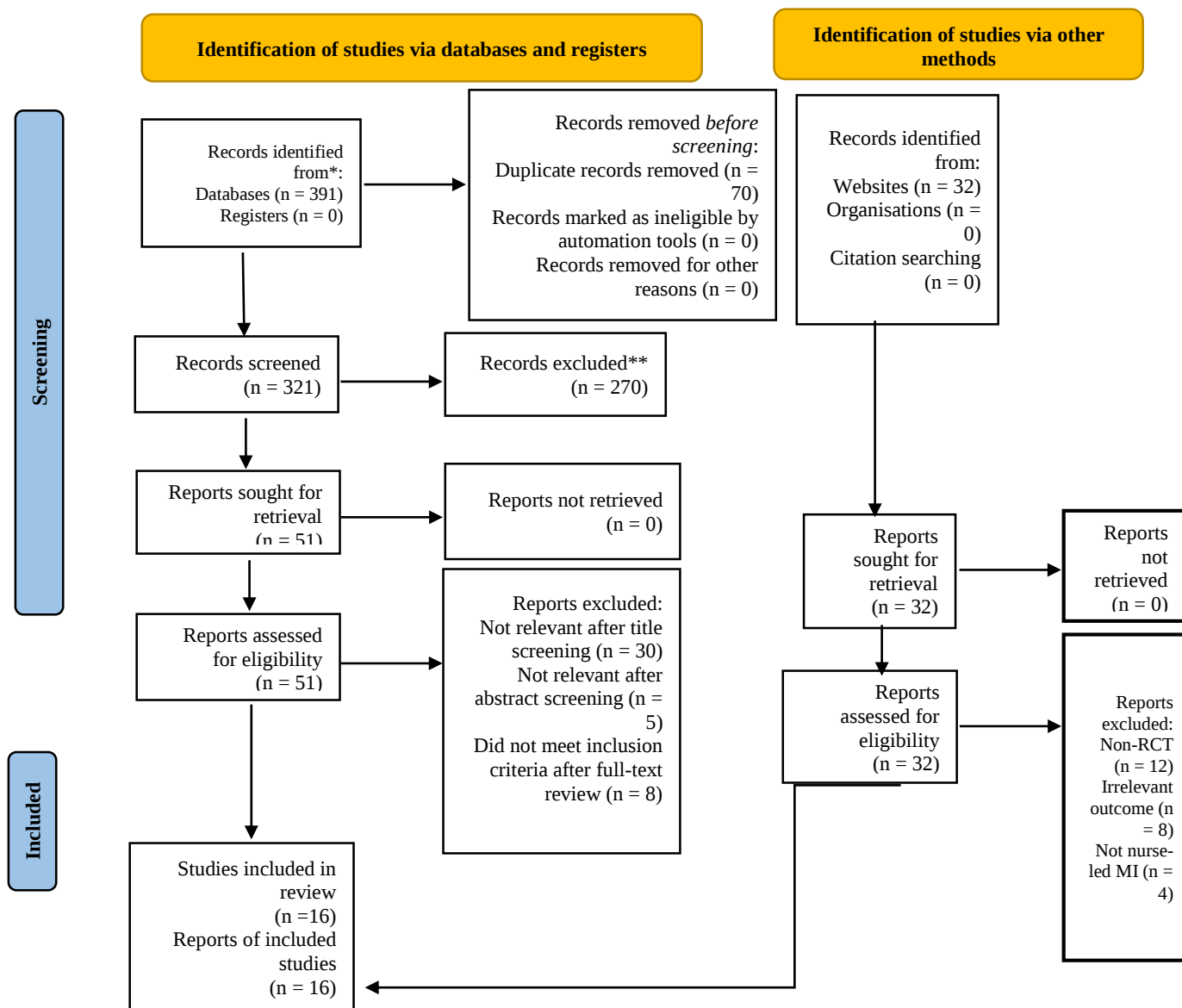


Figure 1. PRISMA 2020 flow diagram of the literature search and study selection process

### Narrative Synthesis Findings

Given the substantial clinical and methodological heterogeneity across the included studies in terms of study population, disease type, intervention structure and intensity, number of sessions, follow-up duration, and outcome measurement instruments, a meta-analysis was not deemed appropriate for this review. Therefore, the findings were synthesized narratively and presented according to disease type.

### Heart Failure

Seven studies were conducted on patients with heart failure. Across most of these studies, MI-based interventions were associated with improvements in at least one dimension of self-care or self-management. In the study by Vellone et al. (2020), the baseline self-care scores were 44.90 (20.13) and 45.38 (20.14) in the intervention and control groups, respectively. Post-intervention outcomes were

reported as change scores ( $\Delta$ ), and post-intervention mean and standard deviation values were not provided [29]. Dellafiore et al. (2023) assessed self-care outcomes using the Self-Care of Heart Failure Index (SCHFI) at the 12-month follow-up. The findings favored the intervention; however, complete post-intervention values were not reported for all SCHFI dimensions [30]. In the study by Chen et al. (2018), the SCHFI score increased from 48.80 (9.79) to 65.35(15.13) in the intervention group and from 29.26 (8.68) to 44.82 (15.44) in the control group [31]. In the study by Locatelli et al. (2022), caregivers' self-care, measured using the Caregiver Contribution to Self-Care of Heart Failure Index (CC-SCHFI), increased from 54.8(19.0) to 60.0 (21.0) in the intervention group and from 48.1(19.7) to 57.1 (20.0) in the control group [28]. Paradis et al. (2010), Nolan et al. (2021), and Masterson Creber et al. (2015) also reported improvements in self-care or self-management-related outcomes following the intervention [32, 33, 34].

### Type 2 Diabetes

Four studies were conducted on patients with type 2 diabetes. İşleyen et al. (2025) reported that the Diabetes Self-Management Scale (DSMS) score increased from 25.44 (6.50) to 32.75 (5.57) in the intervention group and from 23.32 (7.27) to 26.11 (9.00) in the control group. Outcomes were assessed at the 6-month follow-up [35]. Similarly, Dogru et al. (2019) reported an increase in the Perceived Diabetes Self-Management Scale (PDSMS) score in the intervention group, from 17.1 (5.6) to 35.0 (4.1). In contrast, the score decreased in the control group, from 21.7 (3.3) to 16.5 (2.6) [36]. Chen et al. (2012) assessed self-management outcomes using the Diabetes Self-Management Scale (DSMS); however, the corresponding mean and standard deviation values were not reported (NR) [37].

Holmen et al. (2014) evaluated self-management using the Health Education Impact Questionnaire (heiQ).

After 1 year, only the Skills and Technique Acquisition domain showed significantly greater improvement in the intervention group receiving nurse-led health counseling based on motivational interviewing ( $P = .04$ ) [38].

### Chronic Obstructive Pulmonary Disease (COPD)

Two studies were conducted on patients with COPD. Song et al. (2014) reported medication adherence and physical activity as separate self-management outcomes [39]. Borge et al. (2024) assessed self-management outcomes using the Health Education Impact Questionnaire (heiQ) at a 12-month follow-up. Changes in outcome measures and effect size estimates were reported in favor of the intervention group [40].

### Chronic Kidney Disease (CKD)

Two studies were conducted among patients with chronic kidney disease. Cui et al. (2025) reported that the Chronic Kidney Disease Self-Management Behavior Scale (CKD-SMBS) score increased from 84.26 (5.86) to 106.67 (1.32) in the intervention group. In contrast, the corresponding score decreased from 82.89 (20.93) to 74.26 (5.76) in the control group [41]. Zuo et al. (2022) assessed self-management outcomes using the Overall Behavioral Self-management Scale; however, the follow-up results were not fully presented in the table, limiting the quantitative comparison of changes based on the available data [42].

### Multimorbidity

Only one study was conducted among patients with multimorbidity. Fortin et al. (2021) assessed self-management outcomes using the Health Education Impact Questionnaire (heiQ). The table presents the mean values before and after the intervention for the study groups [43].

### Overall Patterns of Intervention Effectiveness

Across the 16 included studies, 14 (87.5%) reported improvements in at least one self-management or self-care outcome favoring the intervention group, whereas two studies reported non-significant or limited findings [37,43]. Descriptively, studies involving four or more intervention sessions and a follow-up period of at least six months reported favorable outcomes more frequently. MI interventions were delivered through various modes, including face-to-face, telephone-based, online, and blended approaches, with positive findings reported for each delivery format. The largest body of supportive evidence was identified among patients with heart failure and type 2 diabetes, whereas the

available evidence among patients with COPD, CKD, and multimorbidity was limited.

## Discussion

This systematic review found that nurse-led MI interventions were associated with improvements in at least one self-management or self-care outcome in most of the included studies. The review synthesized evidence from 16 randomized controlled trials involving 2,805 participants, of which 14 reported statistically significant findings favoring the intervention, whereas two reported non-significant or mixed findings. Overall, the evidence appeared to be strongest for patients with heart failure and type 2 diabetes, whereas the available evidence for respiratory diseases and multimorbidity was more limited and heterogeneous [44–46]. The findings of the present review are consistent with those of the systematic review and meta-analysis by Uzun and Gürhan, which demonstrated that MI may improve self-efficacy, quality of life, and disease management-related behaviors among patients with chronic diseases [15].

However, unlike previous reviews, the present review included only randomized controlled trials in which nurses delivered the intervention, thereby providing more specific evidence on nurses' role in delivering MI. Given that the effectiveness of MI may be influenced by the professional background of the intervention provider [3,4], the favorable findings observed in the present review may be attributable, at least in part, to nurses' ongoing interactions with patients, their comprehensive understanding of patients' physical, psychological, and social needs, and their ability to provide individualized support for behavioral change [46,47]. Such ongoing interactions may also facilitate the development of a trusting therapeutic relationship, which has been recognized as a key component of effective MI [48]. Furthermore, the holistic nature of nursing care may facilitate the identification of individual, social, and environmental barriers to self-management and enable the provision of support tailored to each patient's needs [46, 47].

In the present review, most studies involving four or more intervention sessions and follow-up periods of at least six months reported favorable outcomes. However, this observation is based on a descriptive comparison of the included studies and, given the heterogeneity of the interventions, it should not be interpreted as evidence of a causal relationship. This finding may also be interpreted in light of motivational theories, which suggest that MI is a gradual process and that sustained behavioral change is unlikely to occur over a short period [48]. According to self-determination theory, the internalization of motivation and its translation into sustained behavior require time, continuous feedback, and interpersonal support [49]. Therefore, more frequent sessions and longer follow-up periods may provide greater opportunities to develop intrinsic motivation, enhance self-efficacy, and promote self-management behaviors [29, 34]. An umbrella review by Timmermans et al. also indicated that personalized, multicomponent interventions grounded in effective patient communication may be the most beneficial for improving self-management [44].

A substantial proportion of the effective interventions included in the present review, particularly for patients with heart failure and diabetes, shared these characteristics and involved repeated sessions, telephone follow-up, and ongoing support. Furthermore, the findings of this review are consistent with the evidence from other nurse-led interventions for chronic disease management [44, 45]. Consistent with these findings, evidence from other behavioral interventions in patients with chronic diseases has also suggested that such interventions may improve psychological and disease management-related outcomes [50]. Almutairi et al. found that nurse-led interventions significantly improved treatment adherence, self-care, and patient participation in decision-making [45]. Similarly, Berardinelli et al. reported that nurse-led interventions, particularly those incorporating motivational approaches, may enhance adherence to therapeutic regimens in patients with chronic diseases [22].

Among studies conducted on patients with heart failure, all seven reported improvements in at least one self-care dimension, although not all self-care dimensions improved in all studies. This finding is consistent with a systematic review by Yang et al., which demonstrated that nurse-led self-care interventions in individuals with heart failure improved self-care and quality of life and reduced hospital readmissions [49]. Given the complexity of heart failure management and the strong dependence of clinical outcomes on patients' daily self-care behaviors, this population may represent a particularly suitable context for implementing MI-based interventions [51, 52].

Regarding studies on type 2 diabetes, three of the four studies reported significant improvements in self-management behaviors, whereas one study found no significant differences between the intervention and control groups. These findings are consistent with the meta-analysis by Mabayoje on diabetes self-management education and behavioral support, which suggested that MI-based interventions may improve adherence to treatment plans [52].

In both CKD studies included in this review, the findings favored the intervention; however, only one study demonstrated a statistically significant improvement. In another study, the way in which the results were reported limited a clear assessment of statistical significance.

However, evidence related to COPD and multimorbidity remains heterogeneous. This heterogeneity may be attributed to the limited number of studies, variations in outcome measurement tools, and the greater complexity involved in managing these conditions. In individuals with multimorbidity, the presence of multiple treatment goals and a higher treatment burden may make behavior change more challenging than managing single chronic conditions [45, 46, 53]. Previous studies have also indicated that evidence regarding the effectiveness of MI among individuals with multimorbidity remains limited, highlighting the need for further studies to evaluate MI in this population [16, 28].

One of the main challenges of this review was the considerable heterogeneity in outcome measurement tools. The included studies used a wide range of instruments to assess self-management and self-care, which limited the possibility of conducting a meta-analysis. Furthermore, variations in the way results were reported (e.g., as means and standard deviations, medians and interquartile ranges, change scores, or odds ratios) hindered direct comparisons across studies. Given the inconsistent reporting of the heiQ subscales across the included studies, and to improve outcome comparability and support the feasibility of narrative synthesis, this review focused specifically on the Skills and Techniques Acquisition subscale. As a practical and behavior-oriented dimension of the heiQ, this subscale reflects patients' capacity to apply skills and self-management strategies to manage their conditions; it may serve as a meaningful indicator for evaluating the effects of self-management-based interventions. This review has several limitations. The considerable heterogeneity in disease types, intervention characteristics, follow-up periods, and outcome measurement tools limited the possibility of conducting a meta-analysis. In addition, many studies had limitations in outcome assessment, mainly due to the use of self-reported measures and the inability to blind the participants. Publication bias should also be considered, as studies with negative or non-significant findings may be less likely to be published. Furthermore, most of the included studies were conducted in middle- and high-income countries, which may limit the applicability of the findings to low-income settings. Given the limited available evidence, further randomized controlled trials are needed, particularly among individuals with respiratory diseases, chronic kidney disease, and multimorbidity, and in low-income countries, to address current gaps in the evidence.

Future studies using standardized measures of self-management and self-care, as well as longer follow-up periods, may improve the comparability and generalizability of the findings.

## Conclusion

The findings of this systematic review suggest that nurse-led MI may be a promising approach for improving self-management and self-care behaviors among patients with chronic diseases, particularly those with heart failure and type 2 diabetes. Interventions delivered across multiple sessions with ongoing follow-up were generally associated with more favorable outcomes; however, this finding should be interpreted with caution because of the heterogeneity of the included studies. Variations in disease populations, intervention designs, follow-up durations, and outcome measurement instruments may limit the comparability and generalizability of the results. Nonetheless, the available evidence supports the potential value of nurse-led MI in the care and education of individuals with chronic illnesses. Rigorous randomized controlled trials are warranted, particularly in under-researched disease areas, to strengthen the existing evidence base.

## Ethical Consideration

This systematic review of published studies did not involve the collection or analysis of primary human data; therefore, ethical approval and informed consent from participants were not required. Nevertheless, all stages of the review were conducted in accordance with ethical principles for scientific research and international standards for systematic reviews. These principles included transparent reporting, academic integrity in the use of published sources, and the application of standardized methods to minimize potential bias in study selection, data extraction, and interpretation of findings.

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## Conflict of Interest

The authors declare no potential conflicts of interest related to the research, authorship, or publication of this article.

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All authors read and approved the final manuscript.

## Artificial Intelligence Utilization

The authors used ChatGPT (OpenAI, GPT-5.5) exclusively to assist with checking and formatting the references in accordance with the target journal's reference style. AI generated no scientific content, interpretation, or conclusions. The authors reviewed, verified, and approved all references and remain fully responsible for the final manuscript.

## Data Availability Statement

Data sharing does not apply to this article because no new datasets were generated or analyzed in the current study.

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## Appendix 1. Comprehensive search strategy in databases

| Database       | Search strategy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| PubMed         | ((((( "Nurses"[Mesh] OR nurse* OR nursing[ OR "nurse-led" OR "nurse led" OR "nurse-delivered" OR "nurse delivered" OR "nurse-managed" OR "nurse managed" OR "nurse-guided" OR "nurse guided" OR "nurse-coordinated" OR "nurse coordinated" OR "nurse-facilitated" OR "nurse facilitated" OR "practice nurse" OR "registered nurse" OR "advanced practice nurse" OR "clinical nurse specialist" OR "nurse practitioner" ) ) AND ( ( "Motivational Interviewing"[Mesh] OR motivational interview* OR motivational counsel* OR motivational counselling OR motivational counseling OR motivational enhancement OR "behavior change counseling" OR "behaviour change counselling" ) ) ) AND ( ( "Self-Management"[Mesh] OR "Self Care"[Mesh] OR self-manag* OR "self-management education" OR "self-management support" OR "self-management behavior*" OR "self-management behaviour*" OR self-care OR "self care" OR "self-care behavior*" OR "self-care behaviour*" OR "self-care practice*" OR "self-care management" ) ) ) AND ( "Chronic illness*" [Title/Abstract] OR "Long-term condition" [Title/Abstract] OR "Chronic condition*" [Title/Abstract] OR "Chronic diseases" [Title/Abstract] OR "Disease, Chronic" [Title/Abstract] OR "Illness Chronic" [Title/Abstract] OR "Chronically Ill" [Title/Abstract] OR "Condition, Chronic" [Title/Abstract] OR "Heart disease" [Title/Abstract] OR "Hypertension" [Title/Abstract] OR "Heart failure" [Title/Abstract] OR "HF" [Title/Abstract] OR "Stroke" [Title/Abstract] OR "Obesity" [Title/Abstract] OR "Diabetes" [Title/Abstract] OR "COPD" [Title/Abstract] OR "Chronic obstructive pulmonary disease" [Title/Abstract] OR "Intestinal disease" [Title/Abstract] OR "Chronic Renal disease" [Title/Abstract] OR "CKD" [Title/Abstract] OR "Hemodialysis" "Epilepsy" [Title/Abstract] OR "HIV" [Title/Abstract] OR "AIDS" [Title/Abstract] OR "Obstructive sleep apnea" [Title/Abstract] OR "OSA" [Title/Abstract] ) ) ) |
| Scopus         | TITLE-ABS-KEY ( ( nurse* OR nursing OR "nurses" OR "nurse-led" OR "nurse delivered" OR "nurse-managed" OR "nurse practitioner" OR "advanced practice nurse" ) AND ( "motivational interviewing" OR "motivational interview*" OR "motivational counsel*" OR "motivational counselling" OR "behavior change counseling" OR "behaviour change counselling" OR "motivational enhancement" ) AND ( self-manag* OR "self-management" OR "self-management education" OR "self-management support" OR self-care OR "self care" OR "self-care behavior*" OR "self-care practice*" ) ) AND ( "chronic disease*" OR "chronic illness*" OR "chronic condition*" OR hypertension OR diabetes OR COPD OR "heart failure" OR stroke OR obesity OR CKD OR HIV OR AIDS OR OSA ) )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Web of Science | ( "Nurses" OR nurse* OR nursing[ OR "nurse-led" OR "nurse led" OR "nurse-delivered" OR "nurse delivered" OR "nurse-managed" OR "nurse managed" OR "nurse-guided" OR "nurse guided" OR "nurse-coordinated" OR "nurse coordinated" OR "nurse-facilitated" OR "nurse facilitated" OR "practice nurse" OR "registered nurse" OR "advanced practice nurse" OR "clinical nurse specialist" OR "nurse practitioner" ) (Abstract) and ( "Motivational Interviewing" OR motivational interview* OR motivational counsel* OR motivational counselling OR motivational counseling OR motivational enhancement OR "behavior change counseling" OR "behaviour change counselling" ) (Abstract) and ( "Self-Management" OR "Self Care" OR self-manag* OR "self-management education" OR "self-management support" OR "self-management behavior*" OR "self-management behaviour*" OR self-care OR "self care" OR "self-care behavior*" OR "self-care behaviour*" OR "self-care practice*" OR "self-care management" ) (Abstract) and "Chronic illness*" OR "Long-term condition" OR "Chronic condition*" OR "Chronic diseases" OR "Disease, Chronic" OR "Illness Chronic" OR "Chronically Ill" OR "Condition, Chronic" OR "Heart disease" OR "Hypertension" OR "Heart failure" OR "HF" OR "Stroke" OR "Obesity" OR "Diabetes" OR "COPD" OR "Chronic obstructive pulmonary disease" OR "Intestinal disease" OR "Chronic Renal disease" OR "CKD" OR "Hemodialysis" "Epilepsy" OR "HIV" OR "AIDS" OR "Obstructive sleep apnea" OR "OSA" (Abstract)                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Google Scholar | ("motivational interviewing" AND nurse AND self-management AND chronic disease)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |