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Review Article

Preventive care models for older adults with multimorbidity: A systematic review for better health outcomes

B. Sharmila[1], Santosh Ramesh Achwani[2], Biswajit Dash[3], S. Veenakirthika[4], S. Sivakumar[5], Kanagaraj Rengaramanujam[6], Danti Joseph[7], Rajkumar Krishnan Vasanthi[8], Kumaraswamy Dabburu[9], Nirmali Gogoi[10*]

[1]Dept. of Physiotherapy, Mother Theresa Post Graduate and Research Institute of Health Sciences, Puducherry, India
[2]Dept. of Family Medicine, Al Bateen Medical Center, Abu Dhabi Health Services Company (SEHA), Abu Dhabi
[3]Dept. of Panchakarma, Government Ayurvedic College & Hospital, Balangir, Odisha, India
[4]Dept. of Physiotherapy, Dr. M. G. R Educational and Research Institute, Chennai, Tamil Nadu, India
[5]Dept. of Physiotherapy, KMCH College of Physiotherapy, Dr NGP Research & Educational Trust, Affiliated to The Tamilnadu Dr M.G.R Medical University, Chennai, Tamil Nadu, India
[6]Physical Therapist, Verland Foundation, Sewickley, Pittsburgh, USA
[7]Dept. of Physiology, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India
[8]Faculty of Health and Life Sciences, INTI International University, Nilai, Negeri Sembilan, Malaysia
[9]Dept. of Pharmacology, Bridgetown International University Barbados, Barbados
[10]Faculty of Nursing, Assam Down Town University, Assam, India

Abstract

Quality of life (QoL) in older adults encompasses physical, mental, and social well-being, focusing on maintaining independence and daily functioning. Aged residential care (ARC) is institutionalized care for those unable to live independently due to physical or cognitive decline. Preventive interventions aimed at improving older adults' health outcomes often target reducing hospital admissions, delaying ARC entry, and enhancing functional ability. Effective interventions address multimorbidity, promote autonomy, and integrate health professional education to ensure long-term health improvements, including QoL. Early reviews on preventive interventions have shown mixed results due to variations in intervention designs, follow-up durations, and contextual factors. Many studies overlooked the integration of diverse care models and holistic outcomes like autonomy and QoL. The role of health risk professional education in supporting intervention implementation has been underexplored. This systematic review aims to consolidate evidence, address research gaps, and provide insights into effective strategies for improving health outcomes in older populations. The review methodology includes a comprehensive search strategy, data extraction, and clear inclusion and exclusion criteria. A quality assessment of the studies ensures high-quality research, and risk of bias analysis evaluates study reliability. The key focus areas include age range and comorbidity, health professional education, intervention effects, main outcomes, recommendations, and study limitations. This review addresses earlier gaps by offering a detailed analysis of integrative intervention models, emphasizing health professional education, and focusing on the sustainability of preventive strategies crucial for today's aging population. Given that the studies reviewed were conducted in high-income countries, future research should explore the adaptation of such interventions to resource-constrained settings, particularly in developing countries facing a growing aging population.

Keywords: Aged residential care (ARC), Older adults, Preventive interventions, Quality of life (QoL).

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*Corresponding author: Nirmali Gogoi
Email: gogoinirmali22@gmail.com

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1. Introduction

High-quality research evidence is essential for informed, evidence-based decision-making in healthcare. As the prevalence of multi-morbidity continues to rise, particularly among older adults, there is a growing need for targeted research that informs the effective management of older patients in primary care settings.[1] Contemporary literature highlights the importance of incorporating outcome measures for older individuals, such as maintaining independence and enhancing quality of life (QoL). Systematic reviews to date have yielded mixed findings on the effectiveness of preventive interventions in reducing hospital admissions, delaying entry into aged residential care (ARC), and improving functional ability and QoL. This variability likely arises from these interventions' complex, multifactorial nature, which often consist of multiple interacting components tailored to diverse and overlapping goals. According to guidance from the UK Medical Research Council (MRC), such complexity may stem from interventions' design and the contextual factors influencing their implementation.[2] In older populations, disability is commonly defined as difficulty or dependence in performing essential activities of daily living. In response, integrated and proactive models of care have been proposed to delay or prevent disability, supporting older adults in maintaining autonomy and reducing reliance on institutional care. One such initiative is the Dutch National Care for the Elderly Programme (NCEP), launched in 2008, aimed to develop innovative care models that enhance the physical, mental, and social well-being of older adults with complex care needs.[3]

Drawing on these principles, a nurse-led, multifactorial intervention was designed for community-dwelling older adults at higher risk of functional decline. This approach incorporated geriatric care principles, person-centred care, and coordinated support to address the multifaceted nature of aging-related health challenges. The intervention's cost-effectiveness was evaluated through a cluster randomized controlled trial from the healthcare system's perspective. Similarly, the Health Risk Assessment for Older People (HRA-O) trial in the United Kingdom demonstrated high acceptability and engagement.[4] However, the absence of integration with local healthcare services and limited follow-up through primary care restricted its effectiveness in influencing health behaviours.[5] These findings stress the need to transition from traditional, disease-specific models of care to integrative, goal-oriented approaches. Older adults increasingly prioritize autonomy and the capacity to manage daily life independently, making it crucial for healthcare systems to adopt proactive strategies. Such approaches should empower patients to set and pursue personal health goals, with professionals facilitating this process through collaborative care planning. Integrated care models that focus on holistic well-being rather than isolated clinical outcomes are better suited to address the complex and evolving needs of aging populations.[6] Therefore, this systematic review aims to evaluate the effectiveness of preventive interventions in improving health outcomes for older adults, focusing on reducing hospital admissions, delaying entry into aged residential care, and enhancing functional ability and quality of life. The review seeks to assess the impact of these interventions on managing multimorbidity, the role of health professional education in supporting intervention implementation, and the sustainability of intervention effects over time.

2. Materials and Methods

2.1. Search strategy

A systematic search of studies published between 2014-and 2017 was performed across multiple databases, including PubMed, MEDLINE, Embase, Web of Science, CENTRAL, CINAHL, and the Cochrane Library, using a comprehensive combination of Medical Subject Headings (MeSH) and free-text terms. Keywords included 'preventive,' 'interventions,' 'primary care,' and 'older people,' tailored to each database's indexing system. Boolean operators, truncation, and phrase searching were employed to optimize sensitivity and specificity. The starting point of 2014 was chosen because previous reviews had already encompassed multicomponent interventions for frail older adults up to late 2013. The review by Beswick et al. and others such as Stuck et al. had already synthesized evidence on multicomponent interventions for frail older adults prior to 2013.[7,8] Inadequate reporting of interventions has been a long-standing concern, particularly in studies predating the implementation of standardized reporting frameworks such as the 2013 MRC guidance. Therefore, to ensure a clearer evaluation of specific intervention components, the authors excluded studies published before 2014.

2.1. Study type and design

This research is a systematic review aimed at synthesizing existing high-quality evidence regarding preventive interventions for older adults in primary care settings. The review included both randomized controlled trials (RCTs) and other relevant study designs that evaluated complex, multifactorial interventions targeting functional decline, hospital admissions, and transitions to aged residential care. Particular emphasis was placed on interventions designed with geriatric principles, integrated care models, and proactive, person-cantered approaches. The complexity of these interventions was acknowledged in the design considerations of this review. The results of the review highlighted the effectiveness of interventions that incorporated geriatric principles, integrated care models, and person-cantered approaches in reducing functional decline, hospital admissions, and transitions to aged residential care.

2.2. Study selection

Studies were selected based on whether they evaluated preventive interventions for community-dwelling older

adults at risk of functional decline or institutionalization. Selection criteria included both experimental and quasi-experimental designs, with priority given to those assessing outcomes such as hospital admissions, entry into aged residential care (ARC), functional ability, and quality of life (QoL). Studies were included regardless of geographic location, provided they were conducted in primary or community care settings and involved older adult populations with complex care needs or multimorbidity.

2.3. Data collection process

Data were extracted systematically from the included studies, focusing on the type of intervention, target population, setting, implementation methods, and outcome measures. Particular attention was paid to identifying integrated care components, follow-up duration, professional roles involved (e.g., nurse-led models), and the contextual factors influencing intervention success. The extraction process also considered the sustainability of outcomes and whether interventions incorporated goal-oriented care planning, health professional training, and patient empowerment strategies.

2.4. Study objectives

The primary objective of this systematic review is to evaluate the effectiveness of preventive interventions in improving health outcomes for older adults, specifically in reducing hospital admissions, delaying entry into aged residential care, and enhancing functional ability and quality of life. Secondary objectives include assessing the management of multimorbidity through such interventions, the contribution of healthcare professional education to intervention delivery, and the durability of outcomes over time. The review also seeks to identify essential intervention components that support autonomy, prevent functional decline, and promote independence in aging populations.

2.5. Inclusion and exclusion criteria

Studies were selected if they involved participants primarily aged 65 years or older, focused on interventions delivered in primary care settings, and targeted general health or functional outcomes rather than specific diseases. Eligible studies used a randomized controlled trial (RCT) design, provided full-text availability in English, and included clear descriptions of the intervention components. They also needed to report at least one relevant outcome, such as hospital or aged residential care (ARC) admissions, activities of daily living (ADLs), or quality of life (QoL). Studies were excluded if they were non-randomized, primarily evaluated for pharmacological or psychological therapies, focused on single-disease management (e.g., diabetes or COPD), or lacked relevant outcome data. Trials conducted in institutional settings or those with insufficient methodological clarity were not selected. The researchers ensured a high standard of evidence for their review. They focused on interventions that had a holistic approach and could significantly impact the overall well-being of older adults. By excluding studies that did not meet their rigorous standards, they were able to provide a more comprehensive analysis of the effectiveness of the interventions in preventing hospital or ARC admissions, improving ADLs, and enhancing QoL for older adults in community settings.

2.6. Risk of bias

The risk of bias was assessed to evaluate the internal validity of included studies using appropriate tools based on study design. For randomized controlled trials, the Cochrane Risk of Bias 2 (RoB 2) tool was employed to assess bias across five domains: the randomization process, deviations from intended interventions, missing outcome data, outcome measurement, and selection of the reported results. For non-randomized studies, the Risk of Bias in Non-randomised Studies - of Interventions (ROBINS-I) tool was used, covering bias due to confounding, participant selection, intervention classification, deviations from intended interventions, missing data, outcome measurement, and selection of the reported result. Two reviewers independently assessed each study, with disagreements resolved through discussion or consulting a third reviewer. The overall risk of bias ratings was categorized as low, moderate, serious, or high, and results were synthesized to inform the quality and reliability of the evidence base. The recommendation, evaluation, development, and evaluation (GRADE) grading technique was used to evaluate the quality of the evidence for intriguing outcomes. It assigned a high, moderate, low, or extremely poor quality rating to the gathered data. Following the analysis, the Robvis program created box and summary charts (**Figure 2**).

2.7. Data extraction and synthesis

Data were systematically extracted from each included study using a standardized charting form designed to capture key information relevant to older adults with multimorbidity in primary care settings. Extracted items included publication year, country, study design (e.g., randomized controlled trial, quasi-experimental), sample size, participant characteristics (such as age and multimorbidity status), intervention type and components, duration and intensity of interventions, follow-up periods, and main outcome measures. Specific attention was given to outcomes related to hospital admissions, entry into aged residential care (ARC), functional ability, quality of life (QoL), and mortality. Additional data on implementation strategies, integration with local healthcare systems, and the role of health professional education were also recorded to provide a comprehensive understanding of intervention delivery and sustainability. The extracted data were synthesized narratively due to the heterogeneity of study designs and intervention types. Studies were grouped and analysed according to their primary objectives and intervention features, such as nurse-led approaches, multifactorial designs, and integrating geriatric care principles. Emphasis was placed on identifying core

components that contributed to effectiveness such as patient-centered goal setting, proactive care coordination, and tailored support to maintain autonomy. Statistical outcomes were compared across studies to assess the consistency and robustness of findings. Patterns in outcome variability were examined in the context of follow-up duration, intervention complexity, and contextual implementation factors. Methodological strengths and limitations were critically appraised to assess the risk of bias and the generalizability of findings.

3. Discussion

3.1. Study selection

After searching the databases, we identified 6 articles on Preventive Interventions to Improve Older People's Health Outcomes patterns in the systematic review conducted between 2014 and 2017. The reasons for excluding certain articles were given in the following PRISMA chart (**Figure 1**)

3.2. Risk of bias

The included studies varied in their risk of bias across different domains. Blom J et al. demonstrated low risk in the randomization process, deviations from intended interventions, measurement of outcomes, and selection of reported results, but had some concerns regarding missing outcome data, leading to an overall rating of some concerns. Walters K et al. was rated low risk across all domains, resulting in an overall low risk of bias. Suijker JJ et al. had low risk in most domains but showed some concerns in the randomization process and a high risk in deviations from intended interventions, resulting in an overall high risk of bias. Hoogendijk EO et al. was found to have some concerns in both the randomization process and outcome measurement, as well as in the selection of reported results, though the overall risk was rated as low. Godwin M et al. had some concerns in the randomization process but was otherwise low risk, leading to an overall rating of some concerns. Kerse N et al. exhibited low risk in most domains but showed high risk in deviations from intended interventions and in the selection of reported results, resulting in an overall assessment of some concerns.

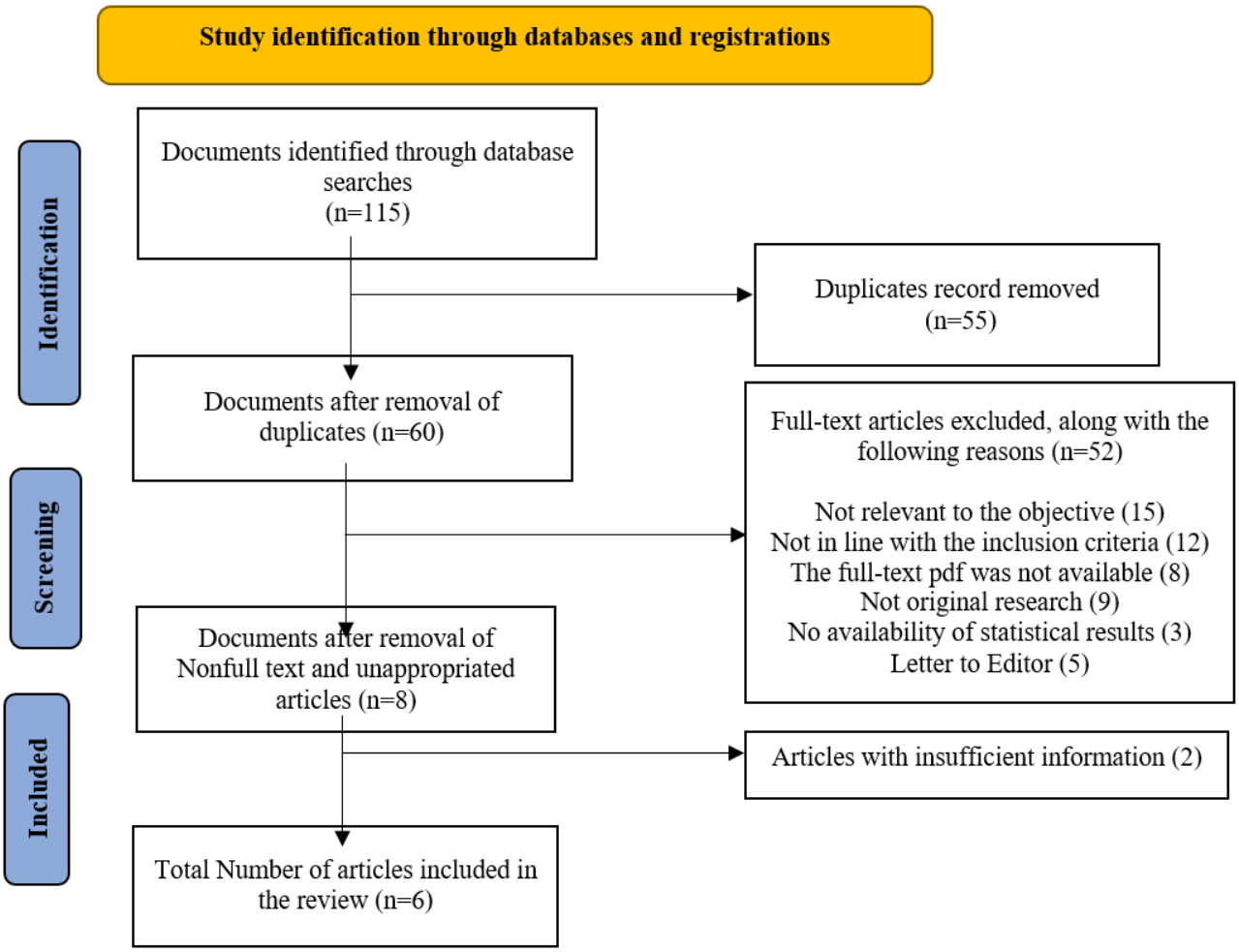

Figure 1: PRISMA chart

Table 1: Reviewers' assessments of each criterion's likelihood of bias for every study that was included

Study	Randomisation process	Deviations from intended intervention	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Blom J 2016[9]	Low	Low	Some concerns	Low	Low	Some concerns
Walters K 2017[10]	Low	Low	Low	Low	Low	Low
Suijker JJ 2017[11]	Low	Some concerns	Low	Low	Low	High
Hoogendijk EO 2015[12]	Some concerns	Low	Low	Some concerns	Some concerns	Low
Godwin M 2016[13]	Some concerns	Low	Low	Low	Low	Some concerns
Kerse N 2014[14]	Low	High	Low	Low	High	Some concerns

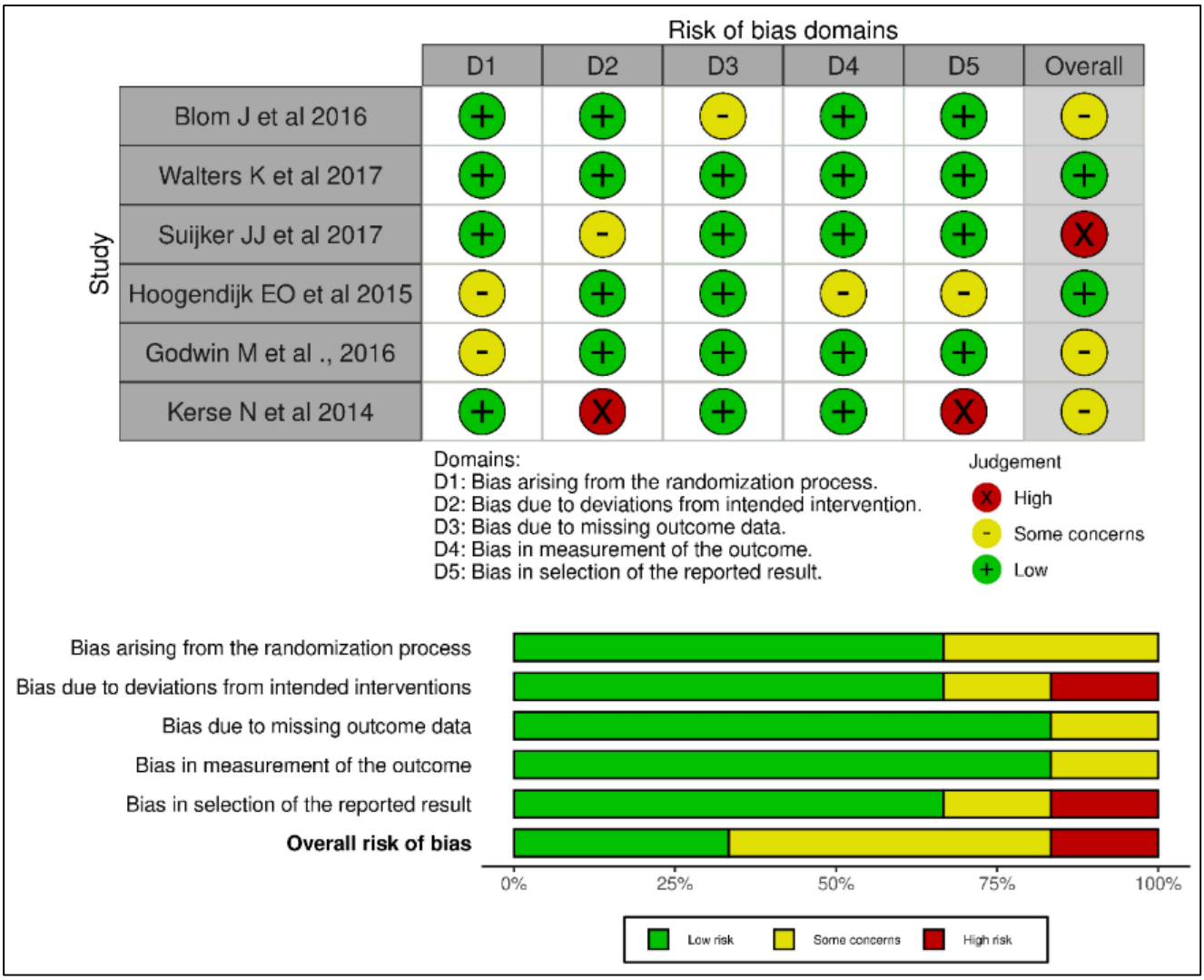

Figure 2: Risk of bias for included studies: The percentage represents the reviewers' assessment of each criterion

The Cochrane risk of bias assessment found that most studies had low or moderate bias risks, with minimal bias in outcome assessment and randomization. However, selective reporting, missing data, and departures from planned interventions raised concerns. The majority of studies had a low risk of bias. According to Sterne et al., domains such as random sequence generation and outcome assessment are often well-addressed, thereby minimizing bias in these areas.[15] In a review by Savović et al., the risk of bias related to missing outcome data and selective reporting was more variable, with some studies demonstrating incomplete reporting or unexplained exclusions, which could potentially influence the effect estimates.[16,17]

Table 2: PICOS framework for the included studies

PICOS Component	Details	Inclusion Criteria	Exclusion Criteria
P (Population)	Older adults in community settings	Participants aged ≥65 years, community-dwelling	Institutionalized populations; studies lacking clear age focus
I (Intervention)	Non-pharmacological, non-psychological interventions in primary care	Interventions such as integrated care, health promotion, nurse-led or multidisciplinary care	Pharmacological or psychological therapies; interventions focused on single diseases (e.g., diabetes, COPD)
C (Comparison)	Usual care or other intervention arms	Usual care or alternative care models defined in the studies	Studies without a comparator or control group
O (Outcomes)	Functional and care-related outcomes	Hospital or aged residential care (ARC) admissions, ADLs, QoL	Studies lacking relevant outcome data
S (Study Design)	Type of research methodology	Randomized controlled trials (RCTs), full-text available in English, with described intervention components	Non-randomized trials, unclear methods, or studies not in English

3.3. The PICOS framework

In systematic reviews (SRs), the PICOS framework—Population, intervention, comparison, outcome, and study design—is a key tool for developing methodical and targeted search tactics. PICOS ensures that the study selection is closely aligned with the research objectives by breaking down the review question into these components. This methodical approach improves the overall methodological rigor of the review and enhances the coherence and relevancy of the included content. PICOS improves search accuracy, decreases the retrieval of unnecessary material, and speeds up finding and filtering pertinent research across several databases by carefully defining and fine-tuning inclusion criteria.

The PICOS framework outlined in **Table 2** governs the selection criteria for studies included in this systematic review, which aims to assess the effectiveness of non-pharmacological interventions for older adults in primary care settings. The population comprises community-dwelling individuals aged 65 years or older, excluding institutionalised populations or studies without clear age parameters. The intervention focuses on various non-pharmacological and non-psychological strategies, such as integrated care, health promotion, and nurse-led or multidisciplinary care, while excluding pharmacological treatments and interventions specific to single diseases like diabetes or COPD. Comparators include usual care or alternative care models, with studies that lack a control group being excluded. Key outcomes include hospital or aged residential care (ARC) admissions, activities of daily living (ADLs), and quality of life (QoL), with studies lacking relevant outcome data being excluded. The study design includes only randomized controlled trials (RCTs) with full-text availability in English and well-described intervention components, excluding non-randomized trials or studies with unclear methodologies. This approach ensures a rigorous, comprehensive review of interventions to improve health outcomes for primary care older adults. Several previous systematic reviews have demonstrated the importance of using a structured framework like PICOS to ensure methodological rigor and transparency when synthesizing evidence for non-pharmacological interventions in older adults. Boult et al. emphasized the value of selecting only high-quality randomized controlled trials (RCTs) to assess care models for older adults, noting that studies with clearly defined populations and interventions yield more actionable findings.[18] Similarly, Beswick et al. highlighted the significance of including studies targeting community-dwelling adults aged 65 and older, as outcomes such as hospitalisation, functional ability, and quality of life are particularly relevant to this group.[7] Moreover, Stuck et al. found that multidisciplinary care interventions, especially those involving nurse-led approaches, can significantly improve ADLs and reduce institutionalization rates.[8] Several studies have demonstrated that non-pharmacological interventions can meaningfully enhance health outcomes among older adults in primary care. A meta-analysis by Elkan et al. found that home-based health promotion programs led by nurses significantly improved functional abilities and reduced hospital admissions.[19] Similarly, a systematic review by Crocker et al. confirmed that complex interventions, including multidisciplinary care and case management, were associated with better physical functioning and reduced institutionalization.[20] Moreover, a review by Markle-Reid et al. found that integrated care models delivered in primary care settings improved the quality of life and self-rated health in older adults.[21] These findings align with the current review's results, where interventions like nurse-led care and coordinated multidisciplinary approaches effectively improved ADLs and minimized care transitions. The consistency across high-quality randomized controlled trials reinforces the reliability of these outcomes and highlights the practical value of implementing such interventions in community settings.

Table 3: Overview of study locations and participant demographics

Study	Country	Sample size (Participants)	Gender (M/F)	Age/Range
Blom J 2016[9]	Netherlands	7,285	M and F	≥75
Walters K 2017[10]	UK	454	F	>65
Suijker JJ 201711	Netherlands	2,283	F	>70
Hoogendijk EO 2015[12]	Netherlands	1,147	F	Frail older adults
Godwin M 2016[13]	Canada	236	M and F	≥80
Kerse N 2014[14]	New Zealand	3,893	F	≥75

Table 4: Summary of interventions, follow-up, health conditions, and training in the studies

Study	Interventions domain	Follow up	Comorbidity	Health professional (HP) education
Blom J 2016[9]	Integrated care plans, proactive management, multidisciplinary consultations.	12 months	Multiple health issues, complex interactions, integrated treatment.	Training programs, geriatric specialization, enhancing care skills.
Walters K 2017[10]	Area focused on implementing health strategies.	12 months	Presence of multiple health conditions in an individual.	Health Promotion education to improve patient knowledge and behaviours.
Suijker JJ 2017[11]	Nurse-led multifactorial care	6 and 12 months	High levels of multimorbidity	Training for community-care registered nurses
Hoogendijk EO 2015[12]	Geriatric in-home assessment, tailored care plan	Reassessment every six months	Multiple chronic diseases, functional disabilities	Training and supervision for practice nurses
Godwin M 2016[13]	Nurse-based home care program	6 and 12 months	Assessed using Comorbidity Symptom Scale	Health promotion and education addressed
Kerse N 2014[14]	Proactive case finding	36 months	NR	Training for practice nurses

HP = Health professional

3.4. Age range and comorbidity

The studies included in this review focused on older adults with varying age criteria and degrees of comorbidity. Blom et al. and Kerse et al. included participants aged ≥75 years, while Walters et al. targeted individuals over 65, and Suijker et al. studied those over 70. Hoogendijk et al. focused specifically on frail older adults, and Godwin included participants aged ≥80 years. Comorbidity was a common inclusion factor, with studies addressing multiple health issues and complex interactions requiring integrated treatment. High levels of multimorbidity and functional disabilities were noted in participants across studies, with Suijker et al. assessing this using the Comorbidity Symptom Scale, while Godwin did not report specific comorbidity assessment details. While comorbidity may have been a common inclusion factor in the studies mentioned, it is important to note that Godwin did not report specific comorbidity assessment details, potentially limiting the overall understanding of the impact of multiple health issues on older adults. By taking a more holistic approach to comorbidity assessment, healthcare professionals can develop more effective and tailored treatment plans that address the complex needs of older patients (**Table 3**). Multimorbidity is highly prevalent among older adults and significantly affects functional status, quality of life, and care needs. Marengoni et al. emphasized that the coexistence of multiple chronic diseases complicates management strategies and increases the risk of hospitalizations and mortality.[22] Similarly, Tinetti et al. argued that disease-specific guidelines often fail to account for the interactive effects of comorbid conditions in older people, advocating for individualized, goal-oriented care.[23] Boyd et al. highlighted that older adults with multiple conditions are often excluded from clinical trials, limiting generalizability and stressing the need for comprehensive and inclusive assessment strategies.[24]

3.5. Interventions and health professional education

The interventions employed across the included studies demonstrated a wide range of strategies to support older adults in primary care settings. Blom J et al. implemented integrated care plans featuring proactive management and multidisciplinary consultations. Walters K et al. focused on delivering health strategies at the population level to enhance general health outcomes. Suijker JJ et al. introduced nurse-led, multifactorial care tailored to the needs of community-dwelling older adults, while Hoogendijk EO et al. utilized geriatric in-home assessments combined with personalized care planning. Godwin M et al. designed a nurse-based home care program, and Kerse N et al. emphasised proactive case finding to identify at-risk individuals early. In addition to these intervention strategies, health professional (HP) education was a key component across several studies. These educational elements included training programs emphasizing geriatric specialization and skill enhancement in care delivery. One study provided health promotion education to improve patient knowledge and health behaviours. In some cases, community-care registered nurses were offered training and supervision, while others focused on supporting practice nurses through structured educational initiatives. Overall, patient-cantered interventions and targeted health professional training aimed to improve outcomes by enhancing the quality, coordination, and responsiveness of care delivered to older adults (**Table 4**). Numerous studies have validated the effectiveness of multifaceted, non-pharmacological interventions for older adults in primary care. Stuck et al. found that home-based, nurse-led care with personalized assessments significantly reduced functional decline and nursing home admissions.[25] Similarly, Boult et al. demonstrated that guided care models involving multidisciplinary teams improved patient satisfaction and care coordination while reducing emergency visits.[18] Ho et al. highlighted that interventions focusing on proactive case finding and tailored care planning can delay institutionalization and improve independence.[26] Health professional education also plays a vital role; Gonçalves MI et al. emphasised that geriatric training for primary care nurses enhanced confidence and care quality.[27] Moreover, a study by Kim S et al. showed that culturally and contextually adapted health promotion education improved self-management and health behaviours among older adults.[28] These findings reinforce the importance of combining patient-cantered strategies with professional training to improve outcomes in primary care (**Table 5**)

Table 5: Patient discussions, intervention effects, and follow-up outcomes

Study	**Patient discussion**	**Intervention effects**	**Admissions to institutions during follow-up**	**Observation of Mortality in Follow-up Period**
Blom J 2016[9]	Discussions on Care and Health Issues	Results of healthcare service implementation	Incidence of institutionalisation during follow-up period	Participants' death rates were noted throughout follow-up.
Walters K 2017[10]	Patient-Provider Conversations on Care	Health impacts observed from intervention delivery	Frequency of hospital or facility admissions post-intervention	Death rates evaluated and observed after a specified time frame.
Suijker JJ 2017[11]	Dialogues on Health and Care Decisions.	Changes in outcomes due to applied healthcare approaches	Recorded transfers to care facilities after intervention	Mortality rates recorded following the intervention period.
Hoogendijk EO 2015[12]	Encouraging Patient Participation in Care Talks	Consequences of using the Geriatric Care Model	Rates of hospitalizations or long-term care admissions	Fatalities that happened throughout the research period.
Godwin M 2016[13]	Patient-Provider Engagement process discussion	Health benefits linked to the care initiative	Observations of institutional admissions during follow-up	Deaths that occurred throughout the research period were recorded.
Kerse N 2014[14]	Exploring Healthcare Choices.	Impact arising from applied clinical strategies	Post-treatment facility or hospital entry rates	Reported deaths over the research period.

Table 6: Summary of main findings, recommendations, challenges, and limitations of included studies

Study	Main findings	Recommendation	Challenges and gaps	Limitation
Blom J 2016[9]	No beneficial effects on patient outcomes observed.	Integrated care not recommended for improving outcomes.	Implementation of proactive care difficult in practice.	No significant impact on functioning or quality of life.
Walters K 2017[10]	Feasible system, identified health and social concerns.	Address access inequalities before wider implementation.	Low participation rates among specific demographics.	Findings may not generalize to all practices.
Suijker JJ 2017[11]	Nurse-led intervention was costly and ineffective in preventing disability in older adults.	Further research is needed for effective care combinations.	Heterogeneity in care program components complicates effectiveness evaluation.	Generalisability is limited to specific geographic regions and potential selection bias.
Hoogendijk EO 2015[12]	The Geriatric Care Model showed no significant benefits over usual care for frail older adults.	More investigation is required to find efficient care combinations.	Finding effective interventions for frail older adults.	Geographic location and sample selection bias issues.
Godwin M 2016[13]	The nurse-led intervention did not improve the independent senior participants' health outcomes.	Consider alternative approaches for elderly care management.	Difficulty in identifying unmet health needs.	Small sample size; non-generalisable results.
Kerse N 2014[14]	Increased disability identification, limited outcome improvements.	Trial stronger primary care integration strategies.	High educational level of participants may skew results.	Less than 50% response rate affects representativeness.

3.6. Main findings and recommendations on preventive interventions for older adults

The included studies reported mixed findings on the effectiveness of preventive interventions for older adults. Blom et al. found no significant improvements in patient outcomes, while Walters et al. observed that the system was feasible and useful for identifying health and social concerns. Suijker et al. found that the nurse-led intervention was costly and ineffective in preventing disability. Hoogendijk et al. reported no significant benefits of the Geriatric Care Model over usual care for frail older adults. Similarly, Godwin noted no improvement in health outcomes for independent seniors following a nurse-led intervention. Meanwhile, Kerse et al. found improved identification of disability but limited overall improvements in outcomes. While some studies demonstrated the feasibility and utility of the system for identifying concerns, others highlighted its cost and ineffectiveness in preventing disability, with no significant benefits over usual care. The recommendations from these studies include further research to identify the most effective combinations of care components, more in-depth investigations into optimising care strategies, exploring alternative methods to address the complexity of elderly care, and implementing stronger integration within primary care to improve coordination and support for older adults. This approach can lead to more tailored interventions that promote holistic well-being and quality of life for older individuals. By taking a comprehensive and personalized approach to elderly care, healthcare systems can better meet aging populations' diverse and evolving needs, ultimately improving health outcomes and overall satisfaction with care. The evidence on the effectiveness of preventive interventions in older adults remains inconclusive, with several studies reporting limited or no impact on major outcomes. Li CM et al. found that nurse-led interventions did not significantly improve functional outcomes or quality of life in frail older adults.[29] Similarly, Huss et al. reported minimal differences between intervention and control groups in a preventive home visit trial.[30] Similarly, Iliffe et al. emphasized that while case finding and assessment may identify unmet needs, they often fail to translate into measurable improvements unless coupled with well-integrated follow-up services.[31] These findings echo calls for more individualized, context-sensitive models.

Turnbull et al. stressed the importance of aligning interventions with patient goals to ensure better uptake and outcomes.[32] This supports the growing consensus for person-cantered, integrated care tailored to complex geriatric needs. Such approaches emphasize individualized care planning, coordination across multidisciplinary teams, and responsiveness to both medical and psychosocial aspects of aging. By aligning care with what matters most to older adults, these strategies aim to enhance quality of life, reduce unnecessary interventions, and improve overall health system efficiency. It is important to note that all included studies were conducted in developed countries with relatively well-

established healthcare infrastructure. Consequently, the generalizability of these models to developing countries may be limited. Future efforts should focus on adapting these interventions to low-resource settings, considering local health system constraints, workforce shortages, and cultural factors. The rising burden of multimorbidity and aging in LMICs highlights the need for sustainable and affordable preventive care models that are feasible in such contexts."

4. Limitations of Study

The study by Blom J et al. reported no significant impact on functioning or quality of life, limiting the strength of its conclusions. Walters K et al. highlighted that findings may not generalize to all practices, suggesting limited external validity. Suijker JJ et al. faced challenges with generalizability due to its specific geographic setting and potential selection bias. Similarly, Hoogendijk EO et al. had limitations related to geographic location and sample selection bias. Godwin M was constrained by a small sample size, making the results difficult to generalize. Finally, Kerse N et al. experienced a response rate of less than 50%, which may have affected the representativeness of the findings. While the studies mentioned may have limitations in generalizability, they still provide valuable insights and contribute to the existing body of knowledge on the subject. All included studies were conducted in high-income countries, limiting the generalizability of the findings to low- and middle-income countries (LMICs). The feasibility of implementing such resource-intensive, multidisciplinary interventions in developing countries may be constrained by workforce shortages, funding limitations, and infrastructure gaps.

5. Conclusion

This systematic review highlights the complex and multifaceted nature of preventive interventions to improve health outcomes for older adults. The findings underscore the importance of integrating diverse care models that address not only the reduction in hospital admissions and delayed entry into aged residential care (ARC) but also focus on maintaining functional independence and improving quality of life (QoL). Despite mixed results in previous studies, this review emphasizes the significance of multimorbidity management and the role of health professional education in enhancing the implementation of interventions. The review identifies key factors contributing to the effectiveness of interventions, including incorporating holistic approaches that prioritize autonomy and person-cantered care. The review addresses gaps in the existing literature, particularly in integrating primary care services and follow-up mechanisms, which are essential for sustaining positive outcomes. Given the growing burden of aging populations in developing countries, it is imperative that preventive care models are adapted to align with local healthcare infrastructure and resource constraints. Future research should explore scalable, cost-effective interventions tailored to low-resource settings.

6. Source of Funding

None.

7. Conflict of Interest

Conflict of interest declared none.

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