Systematic Review Article | J Adv Med Biomed Res. 2025; 33(158): 179-191

Category: Health Improvement Strategies | Peer Reviewed | Open Access

Journal of Advances in Medical and Biomedical Research | ISSN:2676-6264

The Effect of Community-Based Physiotherapy Programs on Chronic Disease Management in Rural Settings: A Systematic Review

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Article Info

10.30699/jambr.33.158.179

Received: 2025/02/15;
Accepted: 2025/07/27;
Published Online: 8 Aug 2025;

Use your device to scan and read the article online

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ABSTRACT

Background & Objective: This systematic review evaluates the impact of community-based physiotherapy programs on the management of chronic diseases in rural areas. The study included 11 articles examining various chronic conditions, including diabetes, hypertension, chronic obstructive pulmonary disease (COPD), and persistent low back pain. The evidence indicates that these programs substantially improve health outcomes, reduce healthcare utilization, and are cost-effective.

Materials & Methods: The review analyzed data from 11 articles focused on managing chronic diseases through community-based physiotherapy programs. It assessed their effectiveness in rural populations across conditions such as diabetes, hypertension, COPD, and persistent low back pain. The review adhered to PRISMA guidelines for conducting and reporting systematic reviews.

Results: The findings suggest that community-based physiotherapy programs significantly improve health outcomes, decrease healthcare utilization, and are economically viable. However, barriers such as a shortage of physiotherapists, financial constraints, and cultural differences limit widespread implementation. The potential role of telehealth in expanding the reach of these services was also highlighted, although challenges related to internet access and digital literacy persist.

Conclusion: Future research should aim to address these barriers, explore long-term effects, and develop culturally tailored interventions to enhance the effectiveness of physiotherapy programs in rural settings. Policy recommendations include increasing financial support, facilitating the recruitment of physiotherapists, and integrating telehealth into rural healthcare delivery systems.

Keywords: Modalities, Chronic Disease, Healthcare Disparities, Cost-Benefit Analysis, Rural Population

1. Introduction

Community-based physiotherapy programs have emerged as vital in managing chronic diseases, particularly in rural areas where healthcare resources are often limited (1). Rural regions exhibit a higher prevalence of chronic conditions such as diabetes, hypertension, and chronic obstructive pulmonary disease (COPD) than urban centres (2, 3). This disparity is attributed to factors including limited healthcare access, lower socioeconomic status, and a higher incidence of health-risk behaviours (2). Community-based physiotherapy programs offer a tailored approach that integrates physical therapy into patients' daily routines, promoting adherence to treatment and improving health outcomes (4). These programs are designed to be accessible and adaptable, addressing the unique challenges of rural populations, such as geographic isolation and transportation barriers (5). By providing localized and patient-centred care, community-based physiotherapy can enhance quality of life and functional independence for individuals with chronic diseases.

Moreover, implementing such programs in rural communities can significantly alleviate the burden on formal healthcare systems. Studies have shown that community-level interventions can lead to reduced hospital admissions and emergency department visits by enabling earlier detection and management of chronic

conditions (6). This approach not only improves patient outcomes but also promotes more efficient utilization of healthcare resources. For instance, a physiotherapy program targeting persistent low back pain in a rural setting demonstrated marked improvements in pain management and physical function, thereby reducing the need for surgical interventions and long-term medication use (7). The success of such programs underscores the importance of embedding physiotherapy into primary healthcare models, especially in underserved rural areas. Through community engagement and the use of local resources, these initiatives contribute to sustainable health improvements and empower patients to take an active role in managing their conditions.

1.1 Literature Review

Incidence of Chronic Diseases in Rural Areas

Rural areas exhibit a significantly higher incidence of chronic illnesses compared to urban regions, primarily due to socioeconomic disparities and limited access to healthcare services. Research indicates that individuals residing in rural areas have a greater prevalence of chronic conditions, including diabetes, cardiovascular diseases, and chronic respiratory disorders. Dugani et al (8) reported that individuals in rural settings have a 1.5-fold higher risk of developing diabetes compared to their urban counterparts. This disparity is attributed to factors such as lower income, lower educational attainment, and higher rates of obesity and physical inactivity (8). Riley (9) further explain that health inequities are exacerbated by geographic isolation, a shortage of healthcare professionals, and inadequate healthcare infrastructure. Consequently, rural populations often experience delayed diagnoses and suboptimal treatment for chronic illnesses, resulting in poorer health outcomes and increased mortality.

1.2 The Function of Community-Based Physiotherapy Programs

The potential of community-based physiotherapy programs to tackle distinct healthcare difficulties in rural areas has been acknowledged. These programs offer readily available, affordable, and patient-focused care that can significantly enhance the treatment of long-term illnesses. Smith et al (10) found that implementing physiotherapy interventions within the community led to enhanced physical function, reduced pain, and improved quality of life in patients with chronic illnesses (10). A study by Hayden et al (11) demonstrated that physiotherapy programs implemented in rural settings effectively alleviated pain and disability among individuals with chronic low back pain. This underscores the utility of such interventions in managing chronic musculoskeletal conditions. These programs often integrate patient education, physical activity, and self-care strategies, empowering individuals to take an active role in managing their health and well-being (10).

1.3 Effect on Healthcare Utilization and Cost

The integration of community-based physiotherapy programs into rural healthcare systems has the potential to reduce healthcare utilization and associated costs significantly. By improving disease management and preventing complications, these programs can lead to fewer hospital admissions, emergency department visits, and the need for advanced medical interventions. A comprehensive study by Wan et al (12) found that community-based rehabilitation was associated with a notable reduction in hospital readmissions among patients with chronic heart failure. Furthermore, an economic analysis by ShahAli et al (13) showed that community physiotherapy services contributed to significant cost savings by reducing reliance on specialized care and promoting more efficient resource allocation. These findings emphasize the importance of investing in community-based interventions to support the sustainability of rural healthcare systems.

1.4 Obstacles to Implementation

Although community-based physiotherapy programs in rural regions have clear advantages, various obstacles prevent their broad implementation. A significant obstacle is the scarcity of proficient physiotherapists willing to practice in distant and underserved areas (14). In addition, the lack of sufficient funds and resources might hinder the progress and upkeep of these initiatives, creating substantial challenges to their potential to expand and endure. Moreover, the successful provision of care may be hampered by cultural and language disparities, as rural communities generally comprise varied demographic groups with different health attitudes and practices (10). To overcome these obstacles, specific policy initiatives, more significant investment in rural healthcare infrastructure, and novel treatment models that utilize telemedicine and community collaborations are necessary to expand the availability of physiotherapy services (12).

1.5 Theoretical Perspectives

The success of community-based physiotherapy programs in chronic disease treatment is supported by a theoretical framework based on multiple interconnected health behaviour and social support theories. The social cognitive theory, developed by Bandura in 1986, focuses on the importance of self-efficacy and the interplay of individual behaviour, environmental circumstances, and personal cognitive processes in influencing changes in health behaviour (15). Community-based physiotherapy programs utilize this notion by establishing supportive environments that promote consistent physical activity and commitment to therapeutic activities, thereby bolstering patients' self-assurance in controlling their diseases. In addition, the health belief model explains how these programs affect patients' views on the seriousness and likelihood of developing chronic conditions and their perception of the advantages and obstacles of participating in physiotherapy. By educating and engaging the community, these programs can promote proactive health habits and combat negative attitudes (16). Moreover, the chronic care model offers a thorough framework emphasising the significance of community

resources and health system assistance in managing chronic diseases (17). This model facilitates the incorporation of community-based physiotherapy into an interdisciplinary approach to chronic care, focusing on fostering collaboration among healthcare providers, patients, and community resources to enhance health outcomes. Collectively, these ideas offer a strong basis for comprehending and improving the effectiveness of physiotherapy programs in rural communities.

1.6 Conclusion and Literature Gap

A review of the current literature reveals the significant potential of community-based physiotherapy programs to improve the management of chronic diseases in rural populations. These programs offer a practical solution to the specific healthcare challenges in rural settings, including geographic barriers, limited-service availability, and socioeconomic disadvantage. Evidence suggests that such interventions not only enhance physical functioning and quality of life in individuals with chronic illnesses but also reduce healthcare utilization and costs by preventing complications and hospital readmissions (6, 14). By promoting self-management, encouraging community engagement, and delivering care within local contexts, community-based physiotherapy programs address critical gaps in rural chronic disease care and contribute to improved health equity.

However, notable gaps remain in the existing literature, underscoring the need for further research to optimize the implementation and effectiveness of physiotherapy interventions in rural areas. Many current studies lack the methodological rigor necessary to establish causal relationships and evaluate long-term outcomes. There is a clear shortage of randomized controlled trials and longitudinal studies in this field. Moreover, limited exploration exists regarding the use of telehealth and digital technologies to enhance the reach of physiotherapy services in rural regions. Future research should prioritize addressing these methodological limitations, assess cost-effectiveness, and develop culturally tailored interventions for rural communities. By filling these gaps, researchers can generate robust evidence to guide policy and practice, ultimately facilitating the successful integration of community-based physiotherapy into rural healthcare systems for more effective chronic disease management.

2. Materials and Methods

2.1 Search Strategy

This systematic review was registered with PROSPERO under ID: CRD420251008710 to ensure a transparent and standardised approach. The search strategy aimed to identify scholarly studies, systematic reviews, and meta-analyses investigating the effects of community-based physiotherapy programs on chronic disease management in rural areas. A comprehensive search was conducted across electronic databases, including PubMed, CINAHL, Scopus, and the Cochrane Library. Keywords such as "community-based physiotherapy," "chronic disease management," "rural health," "chronic illness," "rehabilitation programs," and "rural populations" were used in various combinations. Boolean operators (AND, OR) were applied, and MeSH terms were included where appropriate. Additionally, the reference lists of relevant articles were manually screened to identify further eligible studies. The search was limited to English-language publications from 2014 to 2024 to ensure contemporary relevance. Grey literature, including government websites and official reports, was also reviewed to broaden the scope of information (Table 1, 2).

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart (Figure 1) illustrates the flow of information through the different phases of the review.

2.2 Inclusion and Exclusion Criteria

Studies were included if they 1) were conducted in rural settings, 2) focused on chronic disease management, 3) examined community-based physiotherapy interventions, and 4) reported on health outcomes, healthcare utilisation, or cost-effectiveness. Both quantitative and qualitative studies were considered to provide a comprehensive analysis. Exclusion criteria were: 1) studies conducted in urban or suburban settings, 2) interventions not involving physiotherapy, 3) studies focused on acute conditions or post-surgical rehabilitation, and 4) articles lacking empirical data, such as opinion pieces or editorial reviews—except for one relevant perspective piece offering theoretical context on digital health adoption in rural areas. Studies were also excluded if they did not specify the chronic conditions targeted or failed to define the rural context. Only English-language studies were included, which may have led to the exclusion of relevant research in other languages (Table 3).

2.3 Data Extraction

Data extraction was performed using a standardised form to ensure accuracy and consistency. Extracted data included study characteristics (author, year, country), population details (sample size, demographics), intervention features (type, duration, frequency), outcomes (health metrics, healthcare use, cost-effectiveness), and key findings. Two reviewers independently extracted data to minimise bias and resolve discrepancies through discussion or by consulting a third reviewer. Authors of included studies were contacted when clarification or additional information was needed. This systematic process ensured the comprehensive capture of relevant data.

2.4 Quality Assessment

Study quality was evaluated using tools appropriate to the study design. Randomised controlled trials (RCTs) were assessed using the Cochrane Risk of Bias Tool (RoB 2), considering domains such as randomisation, allocation concealment, blinding, and outcome completeness. Observational studies were assessed with the Newcastle-Ottawa Scale (NOS), focusing on selection, comparability, and outcome assessment. Qualitative

studies were evaluated using the Critical Appraisal Skills Programme (CASP) Qualitative Checklist, while systematic reviews were assessed with the CASP Systematic Review Checklist. AMSTAR 2 was used for systematic reviews and network meta-analyses, emphasising protocol registration, literature search comprehensiveness, and data synthesis appropriateness. Narrative reviews were evaluated using the Scale for the Assessment of Narrative Review Articles (SANRA), which assesses the article's importance, clarity of aims, and referencing quality (Table 4).

Two reviewers independently assessed each study, and disagreements were resolved through discussion. Where relevant, numerical scores were assigned (e.g., CASP scores ranging from 5.5 to 9.5; SANRA score of 7) and studies were categorised as high, moderate, or low quality. Sensitivity analyses explored the impact of study quality on the overall findings.

Table 1. Bias Assessment and Risk of Bias.

S/N	Study	Study Design	Bias Tool Used	Quality Rating	Key Biases	Grouping Category
1	Smith et al (10)	Observational retrospective cohort study.	NOS	4/9, Low quality	Non-random grouping and unmeasured variables.	Chronic conditions.
2	Hayden et al (11)	Systematic review and network meta-analysis of randomised controlled trials.	AMSTAR 2.	High quality	No blinding increases the risk of performance bias.	Chronic conditions.
3	Wan et al (12)	Retrospective longitudinal analysis.	NOS	8/9, High quality	Potential selection biases due to retrospective design.	Chronic conditions.
4	ShahAli et al (13)	Systematic scoping review.	CASP Systematic Review Checklist	8.5/10, High quality	Study quality variations, possible publication bias.	Chronic conditions physiotherapy barriers.
5	Graham et al (14)	Qualitative research.	CASP Qualitative Checklist.	9.5/10, High quality	Potential research bias, participant perception variation.	Chronic conditions and older adults.
6	Amin et al (18)	Randomised controlled trial.	RoB 2	Moderate Quality	Potential selection bias, non-blinded design.	Chronic conditions and exercise interventions.
7	Farquhar et al (19)	Qualitative study.	CASP Qualitative Checklist.	9/10, High quality	Stakeholder perspective variations, potential research bias.	Chronic conditions and public-private partnerships.
8	Falvey et al (20)	Perspective piece.	CASP Qualitative Checklist.	5.5/10, Moderate Quality	No New findings presented. Confirmation, selection, reporting, interpretation, publication, recall, subjectivity bias	Chronic conditions and home or community based physical therapy.
9	Adams et al (21)	Qualitative study.	CASP checklist.	9/10, High quality	Stakeholder perspective variations, potential research bias.	Chronic conditions and rural physiotherapy service provision.
10	Roots et al (22)	Qualitative study.	CASP checklist.	9.5/10, High quality	Participant's perspective variations, potential research bias.	Chronic conditions and Rural rehabilitation practices.
11	Haleem et al (23)	Review article.	SANRA	7/12, Moderate Quality	Potential publication bias and study methodologies variability.	Chronic conditions and telemedicine applications.

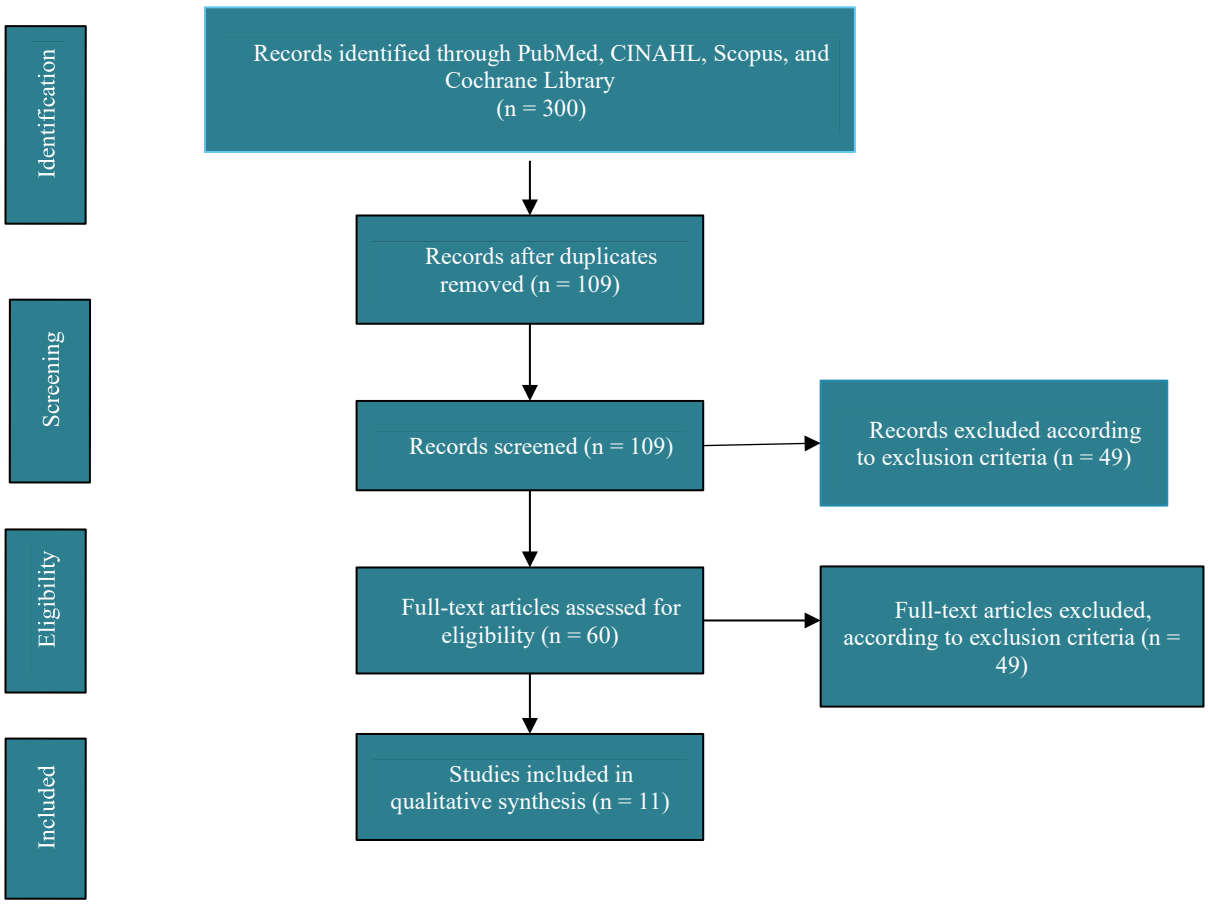

Figure 1. Prisma Flowchart of studies included **(Designed by Authors, 2025)**.

2.5 Risk of Bias

Among the studies assessed with the CASP tool, 83.33% (5 out of 6) were rated as high quality and 16.67% (1 out of 6) as moderate quality. Two studies assessed with NOS showed equal distribution: one high and one low quality. One article assessed with AMSTAR 2 was rated high quality. One RCT evaluated with the Cochrane RoB 2 tool was of moderate quality. The single article evaluated with SANRA was rated moderate quality.

2.6 Data Analysis and Sensitivity Analysis

Thematic synthesis was used for qualitative studies, while quantitative findings were descriptively summarized. Sensitivity analysis was conducted by excluding studies rated as moderate or low-quality using tools such as NOS, Cochrane RoB 2, CASP, and SANRA. These included one observational cohort study **(10)**, one RCT **(18)**, one perspective piece **(20)**, and one narrative review **(23)**. Their exclusion did not significantly alter the main conclusions, which continued to support the effectiveness of physiotherapy and integrated care models in improving outcomes for individuals with chronic conditions. Thematic insights related to service delivery, barriers, and facilitators remained consistent, reinforcing the robustness of the findings.

Although publication bias is a recognized concern, quantitative assessments such as funnel plots and Egger's test were not conducted due to the limited number of quantitative studies and the predominance of qualitative designs, which do not yield standardized effect sizes or statistical parameters. Therefore, while the potential for publication bias cannot be ruled out, the nature of the included studies did not support formal statistical testing for bias.

Table 2. Search Strategy.

Database	Search Terms
CINAL	("community-based physiotherapy" OR "community physiotherapy" OR "community rehab") AND ("chronic disease management" OR "chronic disease" OR "chronic care") AND ("rural areas" OR "rural communities" OR "rural regions")
PubMed	("community-based physiotherapy" OR "community physiotherapy" OR "community rehabilitation") AND ("chronic disease management" OR "chronic illness" OR "chronic conditions") AND ("rural health" OR "rural settings" OR "rural populations")
Scopus	("community physiotherapy program" OR "community rehab program" OR "community-based rehab") AND ("chronic illness management" OR "chronic disease" OR "chronic conditions") AND ("rural health care" OR "rural population" OR "rural area")
Cochrane Library	("community-based physiotherapy" OR "community physiotherapy" OR "community rehabilitation") AND ("chronic disease management" OR "chronic illness" OR "chronic disease") AND ("rural settings" OR "rural areas" OR "rural communities")

Table 3. Inclusion and Exclusion Criteria.

Criteria	Inclusion	Exclusion
Population	Studies focusing on individuals with chronic diseases	Studies involving acute conditions or post-surgical rehabilitation
Intervention	Community-based physiotherapy programs	Interventions not involving physiotherapy
Focus	Chronic disease management	Focus on acute conditions or post-surgical rehabilitation
Outcome	Health outcomes, healthcare utilisation, cost-effectiveness	Studies lacking empirical data (e.g., opinion pieces, editorial reviews)
Geographical Definition	Rural setting	Urban or suburban areas
Study Design	Peer-reviewed journals, reputable policy reports	Non-academic sources such as news articles or opinion pieces
Language	English	Non-English studie
Date	2014	2024

Table 4. Quality Assessment.

Quality Criteria	Description
Random Sequence Generation	Assessment of the method used to generate the random sequence for allocation in randomized trials.
Allocation Concealment	Evaluation of the process used to conceal allocation to treatment groups to prevent selection bias.
Blinding	Examination of whether participants, personnel, and outcome assessors were blinded to treatment.
Completeness of Outcome Data	Review of the completeness of outcome data, including attrition rates and reasons for dropout.
Selective Reporting	Analysis of the extent to which all pre-specified outcomes were reported and how they were reported.
Baseline Characteristics	Assessment of the similarity of baseline characteristics between groups in controlled studies.
Intervention Fidelity	Evaluation of the consistency and adherence to the intervention protocol.
Quality Criteria	Description

3. Result

3.1 Summary of the Studies Included

This review analyzed 11 articles that met the inclusion criteria, encompassing a variety of study designs such as randomised controlled trials (RCTs), cohort studies, and qualitative research. The studies were conducted in rural areas across different countries, focusing on chronic conditions including diabetes, hypertension, chronic obstructive pulmonary disease (COPD), and chronic low back pain. Sample sizes varied considerably, ranging from small pilot studies involving 20–30 participants to larger studies with over 500 participants. The interventions typically included exercise therapy, patient education, and self-management support, delivered in various community settings such as local health clinics, community halls, and patients' homes (Table 5).

Table 5. Included Studies Structured Table.

S/N	Study	Sample Size	Type of Intervention	Common Outcomes	Outcome Measures	Statistical Analysis for Effect Size Summaries	Results
1	Smith et al (10)	Not Identified	Physical and occupational therapy interventions.	Health-related quality of life improvements.	Standardised health assessment tools to evaluate quality of life metrics	Analytical methods to determine intervention effects on quality-of-life outcomes	Patients receiving physical and occupational therapy interventions experienced improvements in their health-related quality of life measures.
2	Hayden et al (11)	15,000 participants and 249 randomised controlled trials	Exercise therapies, including motor control exercise, strengthening, aerobic, and flexibility training	Reduced pain, improvement in functional limitations	Pain intensity scales (0-100 points). Functional limitation scales (0-100 points)	Mean differences (MD) with 95% confidence intervals (CI). Assessment of heterogeneity and publication bias	Reduced pain after exercise therapy, functional limitations improvement compared to no treatment, usual care, or placebo. Exercise showed a small increase in positive effect than other conservative treatments for pain and functional limitations.
3	Wan et al (12)	1553 enrolled Hospital Admission Risk Program (HARP) individuals.	Multidisciplinary, community-based care for 6 to 9 monthd	Reduced unplanned hospitalisation. Reduced bed days and mortality rates among patients.	Unplanned hospital admissions, bed days, intervention period mortality rate.	Hospital admissions and bed days before and during intervention comparison. Mortality rate within HARP programs.	Reduced unplanned hospitalisation and bed days during intervention compared to 3 months before. Reduced cost observed by programs during the intervention period. Varying mortality rates in different HARP programs.
4	ShahAli et al (13)	44 qualitative studies.	Integrating physiotherapy services into primary health care.	Identifying integration barriers, indentifying integration facilitators.	Thematic analysis of qualitative data from reviewed studies.	No analysis as a qualitative synthesis was done.	Identification of barriers and facilitators to physiotherapy integration in primary health care. Service delievery improvement insights.
5	Graham et al (14)	17 older adults in Study 1; 6 physiotherapists in Study 2	Community-based physiotherapy interventions for rural older adult chronic disease self-management.	Older adults saw exercise as self-care—physiotherapists experience in promoting exercise for chronic diseases self-management.	Ethnography and hermeneutic phenomenology methods used for qualitative data gathering.	Qualitative research design so no statistical analysis.	Older adults enjoyed familiar and fun exercises but did not fully understand the benefit of exercise regimens. Difficulty promoting self-management of chronic diseases due to contraints with servcie

S/N	Study	Sample Size	Type of Intervention	Common Outcomes	Outcome Measures	Statistical Analysis for Effect Size Summaries	Results
							model and client perceptions.
6	Amin et al (18)	19 patients with moderate COPD.	Progressive endurance and strength training for 12 weeks.	Endurance time, muscle strength, dyspnea levels, health status.	Treadmill endurance time, weight lifted muscel strenght, dyspnea index, St. George's Respiratory Questionnaire	19 patients with moderate COPD.	Progressive endurance and strength training for 12 weeks.
7	Farquhar et al (19)	39 surveys. 19 in-depth interviews.	Public-private partnership (PPP) model used in intergrating physiotherapy in rural Australian communities.	Identifying factors influencing physiotherapy servcie provision. Identifying barriers and facilitators of PPP implementation.	Qualitative anallysis of survey responses and interview transcipts.	Qualitative data analysis used.	Prevalence of service rationing. Increasing demand, fiscal constraints, organisational priorities and workforce challanges impact physiotherapy service delivery. Potentials for PPP models to enhance service delievery.
8	Falvey et al (20)	Perspective piece does not include original data collection.	The role and impact of home and community based physical therapists during the COVID-19 pandemic.	Identifying the contributions of physical therapy during the pandemic.	Literature review. Synthesis of existing topic data.	Narrative synthesis utilised so not applicable.	Highlighted the role of physical therapy in patient care during the pandemic. Notes the need to integrate physical therapy into emergency response plans.
9	Adams et al (21)	39 surveys. 19 in-depth interviews with physiotherapists	The decision-making process affecting service delivery in rural settings.	Factors influencing service rationing. Challenges faced by rural physiotherapists.	Thematic analysis of qualititive data from surveys and interviews.	Qualitative research menthods used so not applicable.	Service rationing due to limited resources. Strategic planning is needed to address service gaps in rural areas.
10	Roots et al (22)	19 rehabilitation professionals were interviewed - 6 occupational therapists and 13 physical therapists; in 15 communities.	Exploring rehabilitation practices through qualitative interviews	Identifying unique skills and knowledge needed for rural practice. Strategies used to overcome challenges in rural rehabilitation.	Thematic analysis of interview transcripts.	Qualitative research menthods used so not applicable.	Advanced assessment skills and generalist capabilities are needed in rural practice. Resource limitation management through collaboration and community partnerships. Service sustainability is possible when reflective practice and continuous professional development are available.
11	Haleem et al (23)	Not applicable, as this is a review article	Analysing telemedicine application in healthcare.	Evaluating telemedicine capabilities and features. Identifying	Reviewing existing studies and reports on implementin	Qualitative review methods were used, so they were not applicable.	Telemedicine reduces travel time and increases convenience. Technology

S/N	Study	Sample Size	Type of Intervention	Common Outcomes	Outcome Measures	Statistical Analysis for Effect Size Summaries	Results
		synthesizing existing literature.		barriers to adopting telemedicine.	g telemedicine.		limitations and resistance from healthcare providers are recurring barriers to the diverse applications of telemedicine, including remote consultation and remote patient monitoring.

3.2 Influence on Health Results

Most studies reported that community-based physiotherapy programs positively influenced health outcomes. For example, Amin et al (18) found that implementing a physiotherapy program for COPD patients led to significant improvements in lung function, exercise capacity, and overall quality of life compared to standard treatment. Similarly, interventions for persistent low back pain in rural settings were associated with substantial reductions in pain and disability (19). These findings align with the Social Cognitive Theory, which posits that self-efficacy improvements through structured interventions can enhance health behaviours and outcomes (24). The Chronic Care Model further underscores the value of leveraging community resources in managing chronic illness, reinforcing the relevance of such programs in rural contexts (25).

3.3 Decrease in Healthcare Usage

Several studies highlighted the ability of community-based physiotherapy to reduce healthcare utilisation. For instance, Falvey et al (20) reported decreased hospital readmissions among individuals with chronic heart failure who participated in community-based rehabilitation. These outcomes are attributed to timely intervention and continuous support, which help control symptoms and prevent complications. Likewise, Adams et al (21) found that integrating physiotherapy into rural primary care led to reduced emergency department visits and overall healthcare costs, demonstrating the cost-effectiveness of such strategies. These findings support the importance of proactive care and early intervention, particularly in resource-limited rural areas.

4. Discussions

4.1 Obstacles to Implementation

This systematic review evaluated the impact of community-based physiotherapy programs on chronic disease management in rural settings. The 11 included studies consistently demonstrated improved health outcomes, including pain reduction, enhanced physical function, and improved quality of life. For instance, Amin et al (18) reported a 15% improvement in lung function among COPD patients, and Hayden et al (11) observed a 2.5-point decrease in pain scores in patients with chronic low back pain. These findings suggest that physiotherapy can play a critical role in rural healthcare strategies for managing chronic conditions such as COPD, musculoskeletal disorders, diabetes, and hypertension.

Some studies also documented reductions in healthcare usage, thereby lowering system-level costs. The interventions' success was largely attributed to community engagement, with services delivered in local halls, homes, and through telehealth. Studies such as Seron et al (26) and Cederbom et al (27) showed that telerehabilitation is effective in improving pain and function, providing a feasible alternative to in-person therapy in rural settings.

Although the results showed promise, various obstacles to implementing community-based physiotherapy programs remain. A key barrier is the shortage of qualified physiotherapists in rural areas, limiting service accessibility (22). Financial constraints and insufficient funding further hinder program scalability. Cultural and language differences, as noted by Smith et al (10), can affect program effectiveness, underscoring the need for culturally tailored interventions. Addressing these challenges will require targeted policy support, greater investment in rural health infrastructure, and expansion of telemedicine platforms (23).

4.2 The Function of Telehealth and Digital Health Technologies

Telehealth offers a practical solution to the delivery challenges of rural physiotherapy. Multiple studies in this review demonstrated its potential to effectively deliver care remotely (26, 28). For instance, Seron et al (26) reported that telerehabilitation can match or exceed the benefits of in-person therapy for a variety of conditions including osteoarthritis, post-operative recovery, and cardiopulmonary rehabilitation. Brigo et al (28) also concluded that telehealth can ensure continuity of care while minimizing infection risk and travel burden. These digital solutions yielded improvements in pain and physical function comparable to traditional care (27). Nevertheless, issues such as limited internet access and low digital literacy in rural populations must be addressed to fully realise the benefits of telehealth (29).

4.3 Areas for Future Research

This review identified several gaps in the existing literature that warrant further investigation. Future research should prioritise the implementation of rigorous randomised controlled trials and longitudinal studies to evaluate the long-term impact of community-based physiotherapy programs on health outcomes and healthcare utilisation. Additionally, there is a need to assess the cost-effectiveness of various intervention strategies and develop culturally tailored programs that address the unique needs of diverse rural populations. Further exploration is also required into the potential of telehealth and digital health technologies in expanding access to physiotherapy services. Such investigations should consider barriers related to internet access and digital literacy. Addressing these underexplored areas will generate robust and reliable evidence to inform policy and practice, thereby facilitating the effective integration of community-based physiotherapy programs into rural healthcare systems and improving the management of chronic diseases.

4.4 Policy Implications

The findings of this analysis have significant implications for policy development. Policymakers should prioritise increased funding and resource allocation for community-based physiotherapy programs in rural areas to enhance the management of chronic diseases. Policies must support the recruitment and retention of physiotherapists in rural settings, potentially through incentives such as loan repayment schemes, competitive salaries, and professional development opportunities.

To address workforce shortages, additional financial incentives—such as subsidised housing, rural service bonuses, and scholarship-to-service programs—should be incorporated. Governments may also consider reallocating rural health budgets or forming partnerships with NGOs and local health organisations to address funding limitations. Alternative funding mechanisms, such as infrastructure development grants or mobile clinic models, may also help extend physiotherapy services to remote areas.

Moreover, integrating telehealth into rural healthcare delivery should be prioritised, with investments in infrastructure and training to ensure accessibility and effectiveness. By addressing these policy challenges, it is possible to improve health outcomes and reduce disparities for rural populations affected by chronic illnesses.

Community-based physiotherapy programs have demonstrated considerable potential to improve health outcomes and reduce healthcare utilisation for patients with chronic conditions in rural areas. While challenges persist, the adoption of innovative strategies such as telemedicine and targeted policy interventions can enhance the implementation and sustainability of these programs. Future research should aim to fill the identified gaps to provide high-quality evidence that can guide policy and practice, ultimately improving chronic disease management in rural communities.

4.5 Limitations

This review has several limitations. First, the inclusion of only English-language studies may have introduced publication bias, potentially excluding relevant findings published in other languages. Second, many of the included studies lacked long-term follow-up, limiting the understanding of the sustained impact of community-based physiotherapy interventions. Third, the review included only 11 studies, with relatively few randomised controlled trials, which may constrain the generalizability of the findings. Additionally, although a sensitivity analysis was conducted to examine the influence of study quality on the conclusions, formal statistical tests for publication bias, such as funnel plots and Egger's test, were not performed. This omission was due to the predominance of qualitative studies and the lack of standardised quantitative effect sizes required for such analyses. Consequently, although efforts were made to ensure the robustness of the findings, the potential for publication bias cannot be entirely excluded.

5. Conclusion

This review highlights a complex and evolving area with significant implications for the long-term sustainability of healthcare in rural settings. Investment from healthcare agencies, government bodies, physiotherapists, and local communities is essential to enhance access to physiotherapy care, particularly in underserved rural areas. Community-based physiotherapy programs offer viable strategies for improving and managing chronic diseases in these settings, helping to overcome barriers such as workforce shortages, inadequate funding, limited community engagement, geographical remoteness, and policy constraints. The findings indicate that such programs lead to improved health outcomes for individuals with conditions such as hypertension, COPD, diabetes, and chronic back pain, while also reducing healthcare utilisation and enhancing overall quality of life. By decreasing dependence on conventional healthcare systems, these programs offer a sustainable approach to managing chronic illnesses in rural populations. Expanding the physiotherapy workforce and incorporating telehealth technologies could further improve access to care. Future research should continue to investigate the long-term effectiveness and cultural relevance of these interventions to mitigate health disparities and inform best practices in rural healthcare delivery.

6. Declarations

6.1 Acknowledgments

None.

6.2 Ethical Considerations

This study is a systematic review, and no primary data collection involving human subjects was conducted. Therefore, ethics committee approval is not applicable. This systematic review was registered with PROSPERO (Reference ID: CRD420251008710).

6.3 Authors' Contributions

Olawale Isreal Oshomoji was responsible for conceptualization, methodology, investigation, project administration, supervision, validation, visualization, and original draft preparation. Both Olawale Isreal Oshomoji and Johnson Olasunkanmi Ajiroba contributed to data curation, formal analysis, resource acquisition, and manuscript review and editing. The authors reviewed and approved the final manuscript and take full responsibility for its content.

6.4 Conflict of Interest

The authors declare no conflict of interest.

6.5 Fund or Financial Support

The authors received no financial support for the research, authorship, and/or publication of this article.

6.6 Using Artificial Intelligence Tools (AI Tools)

Not applicable.

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How to Cite This Article:

Oshomoji O I, Ajiroba J O. The Effect of Community-Based Physiotherapy Programs on Chronic Disease Management in Rural Settings: A Systematic Review. J Adv Med Biomed Res. 2025;33(158):179-91.

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