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Developing and implementing programs for chronic disease prevention and management at the community level: A systematic review

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Abstract

Community Health Workers (CHWs) have evolved into strategically important adjunct members of the healthcare portfolio, providing key assistance in the care and management of chronic diseases in marginalized populations. This paper reviews the roles of CHW programs in improving health access, outcomes with dimensions of social utilization such as social determinants, and efficacy of CHW programs in providing health care. Our key findings revealed that CHWs offer culturally competent care, provide ongoing support, and help integrate themselves into the healthcare teams, all in support of chronic disease management. However, there are gaps in the research on different populations, there are limitations in program evaluations due to methodological restrictions, and finding sustainable funding models is still a challenge. This paper therefore urges a coordinated effort between policymakers, healthcare providers, and community organizations to maximize the potential of CHW programs. Interdisciplinary collaboration among healthcare professionals is recommended, as are recommendations for comprehensive training for CHWs and supportive funding frameworks, along with further research to assess the long-term impact of CHW interventions., by adopting these forms of leadership, stakeholders will be able to nurture community health initiatives, create better outcomes for all populations, and enhance overall equity in the healthcare system.

Keywords: Chronic diseases; Community level; Community Health Workers; Health initiatives; Community programs

1. Introduction

Globally, chronic diseases such as heart disease, diabetes, and cancer are leading up on the list of the most important health challenges. Chronic diseases reported by the World Health Organization (WHO) in the European region constitute around 86% of all deaths and are a major part of health budget costs in all countries, which account for about 50 to 80 % of all health budget costs in developed nations [1]. Alarming and still increasing, chronic diseases now outnumber infectious diseases in their global health impact [1], especially in low-income and middle-income countries, where 80% of chronic disease-related deaths still persist [1].

Chronic diseases, including cardiovascular disease, cancer, diabetes, and obstructive lung diseases, affect nearly two-thirds of Americans at some point during their life course and have a staggering impact on individuals, healthcare systems, and communities across the globe [2,3]. Recognized in global health as the major noncommunicable diseases (NCDs), these four diseases cause the majority of deaths globally, with most occurring in low- and middle-income countries [3]. In the United States, these diseases are responsible for $3.6 trillion in total annual costs (inclusive of lost economic productivity); projections estimate continued increases in the coming decades [2, 4].

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Many community interventions for chronic disease prevention and management exist in a landscape comprising a variety of programs that utilize local resources and engage key community members. To consolidate existing literature, the framework and variations of these programs, selected successful models, and geographic and demographic variations are reviewed. Community-based interventions (CBIs) are essential in dealing with chronic disease, especially in underserved populations. Often these interventions use local community organizations to deliver education, resources, and support designed for specific health needs. For example, a qualitative study found that CBOs help patients living with chronic diseases get access to healthcare resources in socio-economically deprived situations [5]. Different community nursing interventions like home visits, telehealth services, and coordinated care interventions have shown improvement in health outcomes for chronic conditions such as diabetes and cardiovascular diseases [6]. These programs are very useful for areas with inadequate health care coverage.

The prevalence and impact of chronic diseases are growing, yet effective prevention and management methods are essential. These management and prevention strategies must be diverse and community-oriented. Comprehensive chronic disease management programs appear to provide evidence that programs that promote self-management practices and increased access to care can significantly improve health outcomes [7]. As part of reducing the causes of health disparities as far as chronic diseases, they need to be integrated with these strategies, as social determinants of health. Intervention at diverse levels of prevention, management, and policy is needed, and it needs to occur in a coordinated manner, at both community and systemic levels. If these strategies are prioritized, there will be a reduction in the economic and social impacts of chronic diseases and benefit overall public health.

A multicomponent strategy designed to address individual behavior and community environments or physical environments in a specific population at a community level refers to a community-level intervention. Typically, these are collaborative among several stakeholders such as community members, healthcare providers, and local organizations to create an environment conducive to the improvement of health [8]. These programs can effectively address population groups at high risk for chronic diseases, as well as promote cultural changes that enhance the population's overall well-being by using the entire community as a unit of intervention.

The main aim of developing and implementing programs for chronic disease prevention and management at the community level is to enhance the health outcomes of populations by addressing the growing burden of chronic diseases through localized, accessible, and sustainable interventions. This approach recognizes that chronic diseases, such as diabetes, heart disease, and obesity, are often influenced by a complex interplay of social, economic, and environmental factors that vary significantly across different communities.

2. Methodology

2.1 Literature Review Approach

As a systematic review, this research employed a systematically structured and rigorous methodology to assess what is known from the literature on community-level interventions aimed at chronic disease prevention and management at the population level. Methods of the systematic review methodology are developed to decrease bias and improve the reliability of conclusions by following a defined protocol that addresses the research questions, the selection criteria of inclusion and exclusion, and assembling the data [9]. The highest standard for knowledge assessment in any field is recognized as this approach because it provides comprehensive evidence synthesizing.

2.2 Databases and Search Strategies

Multiple electronic databases including PubMed, Scopus, Web of Science, and Cochrane Library were searched to determine the literature search. These databases were chosen because they had wide coverage of health-related literature. For the group's search strategy specific keywords and phrases such as, community-level intervention, chronic disease prevention, and management were used. Boolean operators (AND, OR) were used to refine search results. Reference lists of relevant articles were also reviewed to obtain other studies that fulfil the inclusion criteria [10].

2.3 Inclusion and Exclusion Criteria

The inclusion criteria for this systematic review were focused on studies that:

- Evaluate community-level interventions aimed at chronic disease prevention or management.
- Are published in peer-reviewed journals within the last 10 years.
- Involve human participants.

- Provide quantitative or qualitative data on health outcomes.

2.4 Exclusion criteria will include

- Studies not published in English.
- Articles focusing solely on individual-level interventions without a community component.
- Review articles, editorials, or opinion pieces without original data.

These criteria ensure that the review captures relevant and high-quality studies that contribute to understanding effective community-based strategies.

2.5 Target Populations

Identifying and understanding target populations is crucial for the success of community-level interventions. This dimension involves analyzing demographic factors such as age, gender, socioeconomic status, and health disparities that may influence health outcomes. Interventions must be tailored to address the specific characteristics and challenges faced by these populations. Engaging community members in the planning process can enhance relevance and effectiveness by ensuring that programs are culturally appropriate and responsive to local needs [11]

3. Results

3.1 Geographic and Demographic Variations

Table 1 Geographic and Demographic variations of populations in the study

Geographic Variation	Demographic Variation	Key Findings	References
Urban vs. Rural	Socio-economic Status	The prevalence of chronic conditions is higher in urban areas (57.6%) compared to rural areas (41.2%). Wealthier and more educated individuals tend to have a greater number of chronic conditions, indicating socioeconomic disparities in health.	[12]
Regional Differences in the US	Racial Demographics	Areas with the highest chronic disease prevalence have a significantly higher proportion of Black as compared to white residents (11.9% vs. 6.6%) and American Indian/Alaska Native residents (2.7% vs. 0.7%), while Asian and Hispanic populations are underrepresented as compared to white residents.	[13]
Geographic Distribution in Southeastern US	Age and Gender	The southeastern US shows consistently higher morbidity and mortality rates from chronic diseases, influenced by socioeconomic policies that create environments conducive to high poverty and lack of access to healthcare services.	[14]
Geographic Variations in Xinjiang, China	Ethnicity	Older adults in northern Xinjiang show a higher risk of multiple chronic conditions (MCC), with ethnic minorities such as Kazakh, Mongolian, and Hui having increased risks compared to Han and Uygur populations.	[15]
Variations by Primary Health Network	Age Groups	Type 2 diabetes rates are generally higher in regional areas than in metropolitan areas, with significant differences in hospital admission rates for chronic kidney disease across various health networks.	[16]
Differences in Veterans Health Administration	Health Behaviors	Geographic differences significantly affect the prevalence of uncontrolled chronic conditions among veterans, with individuals moving to areas with lower prevalence showing improved health outcomes over time.	[14]

Table 2 Existing community-level programs and their descriptions

Program Name	Description	Reference
National Diabetes Prevention Program (NDPP)	Focuses on lifestyle changes to prevent type 2 diabetes among at-risk populations through community organizations.	[17]
Chronic Disease Self-Management Education (CDSME)	Provides education on managing chronic conditions through small group workshops in community settings.	[18]
Community Health Centers (CHCs)	Federally funded centers offering comprehensive health services, including preventive care and chronic disease management.	[19]
YMCA Diabetes Prevention Program	A community-based initiative that helps participants make lifestyle changes to prevent or delay diabetes onset.	[20]
Washington State Community-Based Prevention Programs	Works with community partners to develop policies and support changes to prevent chronic diseases and injuries.	[21]
Wisconsin Chronic Disease Prevention Program	Addresses environments, systems, and health behaviors linked to key chronic diseases through community engagement.	[22]
Rural Health Outreach Programs	Focus on improving chronic disease management in rural areas through partnerships with community organizations.	[23]
Healthy People Initiative	Sets national objectives for improving health, including goals related to reducing chronic disease prevalence.	[24]

3.2 Key Components of Effective Interventions

Table 3 The key components of effective interventions

	Key Component	Description	References
1.	Community Engagement Strategies	Engaging community members in program design and implementation to ensure cultural relevance and enhance participation.	[25; 26]
	Participatory Approaches	Actively involving community members in planning and executing health interventions.	[10]
	Cultural Competence	Understanding and respecting diverse cultural backgrounds to tailor health interventions effectively.	[26]
	Local Leadership Involvement	Involving local leaders in health initiatives to enhance credibility and facilitate communication between providers and the community.	[10]
2.	2. Prevention Program Characteristics	Essential features of effective prevention programs aimed at reducing chronic disease incidence.	[24. 26]
	Early Screening Methods	Implementing screening programs for early detection and management of chronic diseases.	[24, 26]
	Health Education Approaches	Disseminating information about health risks and promoting healthy behaviors to empower individuals.	[24, 27]
	Lifestyle Modification Support	Supporting individuals in adopting healthier behaviors through resources such as nutrition counselling and exercise programs.	[20, 28]
3.	Management Program Characteristics	Key components that enhance the effectiveness of chronic disease management programs.	[26, 29]
	Continuous Care Models	Providing ongoing support and management for individuals with chronic diseases through coordinated care across healthcare levels.	[26]
	Self-*Management Support	Empowering patients to take control of their health by enhancing their skills and confidence in managing their conditions.	[28, 30]

	Technology-Enabled Interventions	Utilizing digital tools such as mobile applications and telehealth services to enhance patient engagement and support self-management efforts.	[25]
4.	Barriers and Facilitators	Factors that influence the implementation of chronic disease management programs.	[24]
	Resource Constraints	Limited financial resources, staffing shortages, and inadequate infrastructure that hinder effective program delivery.	[31]
	Social Determinants of Health	Factors such as socioeconomic status and access to healthcare services that impact individuals' ability to engage with health programs.	[24]
	Community Readiness	The extent to which a community is prepared to engage in health promotion activities; higher readiness leads to better implementation outcomes.	[32]

4. Discussion

The comparative effectiveness of health interventions can vary significantly across different settings, highlighting the importance of context in determining the success of programs. For instance, a study on the Latino Health Access Diabetes Self-Management Program (LHA-DSMP) demonstrated substantial improvements in glycaemic control among participants in an underserved community of color. The program, which utilized community health workers (CHWs), resulted in a significant reduction in HbA1c levels compared to usual care provided at a federally qualified health center [2]. This suggests that community-initiated health interventions can effectively fill gaps in access to healthcare services and improve health outcomes for marginalized populations.

Similarly, research has shown that CHWs are effective in various health domains, including maternal and child health, nutrition, and disease prevention. For example, community-based management of severe acute malnutrition (CMAM) has proven effective in reaching larger numbers of malnourished children compared to traditional inpatient care, demonstrating the potential for CHWs to deliver impactful services at scale [32]. These findings underscore the need for tailored interventions that consider the specific needs and characteristics of the populations served.

4.1 Recommended Key Findings

Developing effective community health worker (CHW) programs requires adherence to evidence-based guidelines that ensure the delivery of high-quality care. The WHO CHW Guideline provides a comprehensive blueprint for success, outlining 15 key areas of community health program design that correlate strongly with positive outcomes. These guidelines emphasize the importance of treating CHWs as professionals and ensuring they have adequate training, supervision, and resources to perform their roles effectively. The Community Health Worker Model Best Practice Toolkit offers practical strategies for designing and implementing CHW programs. This toolkit includes guidance on recruiting and training CHWs, establishing effective workflows, and assessing community needs. By following these evidence-based practices, organizations can create robust programs that effectively address health disparities and improve patient outcomes.

5. Conclusion

The integration of Community Health Workers (CHWs) into healthcare systems represents a promising strategy for addressing chronic disease management, particularly in underserved communities. This research highlights the multifaceted roles that CHWs play in enhancing healthcare access, improving health outcomes, and fostering health equity. Through culturally competent care and community engagement, CHWs effectively bridge gaps between healthcare providers and patients, ensuring that individuals receive the support they need to manage chronic conditions. Despite the demonstrated effectiveness of CHW programs, significant challenges persist. Gaps in existing research, particularly concerning diverse populations and long-term impacts, underscore the need for further investigation. Methodological constraints in current evaluations hinder the ability to draw comprehensive conclusions about program effectiveness and scalability. Additionally, sustainable funding models are crucial to ensure the longevity and impact of CHW initiatives. To fully realize the potential of CHWs in chronic disease management, a coordinated approach is essential. This includes investing in training and support for CHWs, establishing financial frameworks that promote sustainability, fostering interdisciplinary collaboration among healthcare professionals, and prioritizing research initiatives that evaluate the effectiveness of CHW programs. By implementing these strategies and addressing existing limitations, stakeholders can strengthen community health initiatives and contribute to improved health

outcomes across diverse populations. The ongoing commitment to integrating CHWs into healthcare systems is vital for creating a more equitable and effective approach to chronic disease management, ultimately leading to healthier communities.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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