

STATE OF THE ART REVIEW

Community Health Workers in Diabetes Prevention and Management in Developing Countries



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Abstract

BACKGROUND There is limited evidence regarding the effect of community health worker (CHW) interventions for prevention and management of the burgeoning epidemic of noncommunicable diseases (NCDs) in low- and middle-income countries (LMICs). The objective of this review was to critically appraise evidence regarding the effectiveness of CHW interventions for prevention and management of type 2 diabetes mellitus (T2DM) in LMICs.

METHODS To identify studies that reported the effect of CHW interventions for prevention and management of T2DM in LMICs, Medline/PubMed, EMBASE, Web of Science (Science and Social Science Citation Indices), EBSCO (PsycINFO and CINAHL), POPLINE, the Cochrane Metabolic and Endocrine Disorders Group's Specialized Register, the Cochrane Central Register of Controlled Trials, the Grey literature (Google, Google Scholar), and reference lists of identified articles were searched from inception to May 31, 2017.

FINDINGS Ten studies were included (4 pre- and post-studies, 2 randomized controlled trials, 2 cohort studies, 1 cross-sectional study, and 1 case-control study). The role of CHWs consisted of patient education, identification and referral of high-risk individuals to physicians, and provision of social support through home visits. Positive outcomes were reported in 7 of 10 studies. These outcomes included increased knowledge of T2DM symptoms and prevention measures; increased adoption of treatment-seeking and prevention measures; increased medication adherence; and improved fasting blood sugar, glycated hemoglobin, and body mass index. Three studies showed no significant outcomes.

CONCLUSIONS CHWs have the potential to improve knowledge, health behavior, and health outcomes related to prevention and management of T2DM in LMICs. Given the limited number of studies included in this review, robust conclusions cannot be drawn at the present time.

KEY WORDS community health worker; diabetes; diabetes management; diabetes prevention; low-and middle-income countries

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INTRODUCTION

Noncommunicable diseases (NCDs) pose a high priority threat to public health worldwide. In 2013, the

World Health Assembly adopted the Global NCD Action Plan, specifying 9 global targets and a monitoring framework for preventing and controlling NCDs by 2020.¹ Likewise, the Sustainable Development

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Goals established by the United Nations recognize the importance of reducing global NCDs.² The Global Status Report on NCDs emphasizes that the negative impacts of NCDs are particularly severe in poor and vulnerable populations, where poverty exacerbates many health conditions. Over three-quarters of the global NCD deaths (28 million) and the majority of premature deaths (82%) occur in low- and middle-income countries (LMICs).¹

Among global NCDs, type 2 diabetes mellitus (T2DM) is especially common.^{3,4} The International Diabetes Federation recently reported that the incidence of diabetes will increase from 415 million in 2015 to 642 million by 2040, with more than 70% of the cases in LMICs.⁵ Despite numerous initiatives to prevent diabetes and diabetes-related complications,^{6,7} the disease remains the fourth leading cause of disease-related deaths globally, with almost 80% occurring in LMICs.¹ In 2010, LMICs were estimated to have spent >5% of their health expenditures on diabetes.⁸ These estimates did not include undiagnosed T2DM cases, which, in LMICs, account for over 50% of people with T2DM.⁹ In addition, indirect diabetes-related costs arising from lost productivity due to disability, premature mortality, and absenteeism could reach US\$13 billion annually for a LMIC.¹⁰

Although many cost-effective interventions address diabetes,¹¹ LMICs experience multiple barriers to adequate diabetes management.^{12,13} Weak national health systems make it difficult to deliver sustainable, equitable, and effective interventions.¹⁴ In many LMICs, there are critical shortages of health care workers, since current medical schools cannot keep up with increasing demand for health care services, internal and external migration of health workers, low workforce productivity, and population growth.^{15,16} In addition, patient education—an inexpensive and effective diabetes-management option—is not practiced routinely.^{9,17,18} Finally, LMIC guidelines and national priorities have historically focused on infectious diseases.¹⁹ These limitations represent a need for paraprofessional health workers, who can bring diabetes prevention and management practices to their communities.

Community health workers (CHWs) have received renewed attention as a means of strengthening primary health care systems and achieving global health goals.^{20–23} CHWs serve as bridges among their ethnic, cultural, or geographic communities and health care providers.^{24,25} They increase knowledge and self-sufficiency through outreach, community education, informal counseling, social support, and advocacy.

CHWs are uniquely positioned to collaborate with diabetes educators and other health care providers. In chronic disease care, CHWs often educate patients, identify resources, provide case management, coordinate care with the health care system, and become part of people's support networks.²⁶ As community members, CHWs instill ownership of health problems, foster trust, and facilitate the assimilation of medical innovations; they also reduce per capita demand for health care providers. Finally, they provide relatively inexpensive solutions to the growing strain on the health care workforce.^{27,28} Therefore, the prospective impact of CHWs in mitigating disease burden in LMICs is tremendous.

CHWs in LMICs have been invaluable in managing maternal and child health services and infectious diseases such as malaria, tuberculosis, and sexually transmitted infections.^{21,29–31} In high-income countries, CHW-led interventions have also improved health behaviors and outcomes, particularly for racial/ethnic minorities and individuals without adequate healthcare.^{32–36} However, little is known about the effectiveness of this approach in LMICs. The only recent review by Jeet *et al*³⁷ on CHW interventions for NCD prevention and control in LMICS had several limitations that our review sought to address. First, their review included only randomized control trials, which typically do not cover the full spectrum of evidence for intervention effectiveness in LMICs where scarcity of resources often makes such studies impracticable. Second, the six studies^{38–43} identified as CHW-led diabetes interventions by Jeet *et al*³⁷ did not meet our strict inclusion criteria.

Specifically, the study by DePue *et al*³⁸ was a nurse-CHW initiative. Nurses are not CHWs, and DePue *et al*³⁸ did not separate the effect of nurse intervention from that of CHWs; neither could they have been able to do so. It was unclear how CHWs were defined in the review. Zhong *et al*³⁹ was a peer-support intervention and not strictly a CHW intervention, and the intervention included initiatives in both primary care clinics and community settings. The study by Jafar *et al*⁴⁰ focused on blood pressure (BP) but was referenced as a diabetes intervention in the table of characteristics of studies, and that by Thankappan *et al*⁴¹ was about smoking cessation among diabetic patients but was referenced as a diabetes prevention intervention. The Wattana *et al*⁴² study assessed the effects of a diabetes self-management program on glycemic control. The intervention was conducted in community hospitals, but there was no indication that it was delivered by CHWs. Thus, a huge gap still remains in knowledge regarding the impact of CHW

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