Sigma’s 30th International Nursing Research Congress
A Systematic Review of Community Health Center-Based Interventions for Persons With Diabetes
Hae-Ra Han, PhD, RN, FAAN
Siobhan McKenna, MSN, RN
Manka Nkimbeng, MPH, RN
Patty R. Wilson, PhD, PMHNP, RN
Sally Rives, MSN, RN
Oli Ajomagberin, RN
Mohammad Alkawaldeh, PhD, RN
Kelli Grunstra, BSN, RN
Phyllis Sharps, PhD, MS, BSN, RN, FAAN

(1)School of Nursing, The Johns Hopkins University, Baltimore, MD, USA
(2)The Johns Hopkins Hospital, Baltimore, MD, USA
(3)The Johns Hopkins University School of Nursing, Baltimore, MD, USA
(4)School of Nursing, The Johns Hopkins University, School of Nursing, Baltimore, MD, USA
(5)The Johns Hopkins University, School of Nursing, Baltimore, MD, USA
(6)The Johns Hopkins University Center for Cardiovascular and Chronic Care, Baltimore, MD, USA
(7)School of Nursing, The Johns Hopkins University School of Nursing, Baltimore, MD, USA

Background: Community health centers (CHCs) deliver health services to vulnerable individuals and families from racial/ethnic minority groups and low-income backgrounds who have limited access to care. Cardiovascular disease (CVD) is the leading cause of death in the U.S. Type 2 diabetes (diabetes) is both antecedent and moderating factor for CVD. Racial/ethnic minorities experience higher rates of diabetes and are more than twice as likely to die from diabetes, underscoring the need for tailored and targeted strategies to meet the needs of vulnerable populations. The focus of CHCs on serving socioeconomically disadvantaged populations with heightened disease burdens makes CHCs an ideal setting for implementing chronic care programs such as diabetes targeting vulnerable populations.

A number of systematic reviews were published with regard to diabetes interventions in primary care and community settings. Previous systematic reviews found that lifestyle interventions, social network interventions, or interventions using community health workers and mHealth were effective in improving glucose control. Additionally, motivational interviewing by general practitioners and nurse-led self-management support interventions resulted in a significant improvement in glucose control. No prior systematic review specifically addressed CHC interventions for diabetes. Given CHCs serving as primary care homes for the nation’s most vulnerable populations, a comprehensive systematic review on CHC interventions to control diabetes among vulnerable populations is needed.

Purpose: The purpose of this study is to synthesize the evidence on CHC interventions. Specifically, we examined the characteristics of CHC interventions and the patient outcomes in people with diabetes. Our review systematically extends the previous efforts by providing an understanding of: 1) what constitutes CHC interventions (type and contents); 2) who delivers CHC intervention; and 3) how CHC interventions achieve desired effects.

Methods: Four electronic database searches, including PubMed, Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and SCOPUS, and hand searches of reference collections were undertaken in January 2018 to identify intervention trials published in English.
A total of 892 unique citations were screened initially for titles and abstracts. Two reviewers then independently evaluated 236 full-text articles that were passed onto review processes. Thirty studies met eligibility criteria for inclusion.

**Results:** All of the 30 studies were conducted in the United States. The CHC interventions included in the review varied greatly in terms of type and modality of the interventions. Twelve interventions used one-on-one education sessions with three of the studies incorporating follow-up telephone calls to answer patient’s questions. Five interventions used group education sessions with the education sessions ranging from one to twelve sessions. Five CHC interventions used the telephone as the main method of communication with one intervention sending daily text messages. Other intervention methods included one diabetic complication screenings and a 1-day workshop that focused on mindfulness as a way to improve one’s management of diabetes. CHC interventions were delivered by various health professionals including registered nurses, dieticians and nutritionists, medical assistants, community health workers, pharmacists, physicians, and nurse practitioners. More than half of the studies included in this review lacked full descriptions of interventionists in terms of selection and training and fidelity monitoring, however.

CHC intervention patient outcomes focused on clinical measures including: HbA1c levels (n=23), blood pressure (n=10), and cholesterol (n=12) as well as diabetes self-management (n=7), and goal setting (n=4). CHC interventions using individual education sessions (5 of 12) and group-education sessions (2 of 5) had significant improvements in HbA1c, while sole telemedicine education studies (n=5) showed no significant improvements in HbA1c. In addition, one study of eleven in which mental health outcomes were measured showed significantly reduced depression scores after receiving the CHC intervention. CHC interventions had no significant effects on physical activity in all six studies that examined physical activity.

**Conclusion:** CHC interventions were generally effective in HbA1c reduction either via individual education or group education, although insignificant HbA1c results were noted in ten of twenty-three studies that examined HbA1c. CHC interventions were also effective in improving lipids and systolic blood pressure among persons with diabetes but only a small number of studies addressed them as study outcomes. Similarly, there was only limited evidence to show that CHC interventions were effective in improving diabetes knowledge, self-management, diabetes related distress, screening for complications, goal attainment, and self-efficacy. There is a strong need for studies to clearly elaborate the contents and processes of interventionists training such as competency evaluation and supervision to optimize the use of the CHC approach. Additionally, in many CHC interventions included in the review, possible cost-efficient model of care may be considered for next line of inquiries. In particular, the U.S. Affordable Care Act—also called Obamacare—aims to increase the quality and affordability of health insurance by expanding public and private insurance coverage while reducing the costs of healthcare for individuals and the government. Community health workers are an important part of healthcare teams for the delivery of care, particularly among medically underserved populations and communities. Clearly, more systematic cost evaluations of collaborating with community health workers as an alternate care model at the CHC is warranted to expedite the translation of research into evidence-based guidelines and recommendations for clinical practice in vulnerable populations.

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**Title:**
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Keywords:
community health center intervention, diabetes and systematic review

References:

Abstract Summary:
We will discuss main findings from a systematic review of thirty-one articles addressing community health center-based interventions for people with diabetes in the United States.

Content Outline:

Learning Objectives
1. The learner will be able to identify prevalence and impact of type 2 diabetes in the United States and globally.

Expanded Content Outline
National and international statistics regarding the prevalence and incidence of type 2 diabetes in terms of morbidity and mortality and any cost associated with the disease.

2. The learner will be able to discuss the role of community health centers (CHCs) for health promotion in underserved communities in the United States.

Government data and statistics describing main populations of CHCs, its services, and patient outcomes reported.

3. The learner will be able to discuss the scope of CHC interventions.

Type and contents of CHC interventions, and its interventionists.
4. The learner will be able to discuss the effects of CHC interventions on patient outcomes.

Physiological and psychological patient outcomes noted by relevant literature addressing CHC interventions

First Primary Presenting Author

**Primary Presenting Author**
Hae-Ra Han, PhD, RN, FAAN
The Johns Hopkins University
School of Nursing
Professor
Baltimore MD
USA

**Author Summary:** As a community health researcher, Dr. Hae-Ra Han works to reduce health disparities by implementing and evaluating community outreach programs in cancer control and cardiovascular health promotion for ethnic minorities. One of the first researchers funded through the Johns Hopkins University School of Nursing, she has served as a principal investigator of federally-funded research focused on cancer control among Korean women and as a co-investigator other investigations concerning diabetes, and health literacy among minorities.

Second Author
Siobhan McKenna, MSN, RN
The Johns Hopkins Hospital
Nurse
Baltimore MD
USA

**Author Summary:** Ms. KeKenna completed the Research Honors program at the Johns Hopkins University School of Nursing. The Research Honors program is a structured one-year enhanced curricular program which requires a series of research activities with an assigned research mentor as part of the mentor's research team. Ms. McKenna successfully completed all of the required research activities including a poster presentation of her scholarly project.

Third Author
Manka Nkimbeng, MPH, RN
The Johns Hopkins University School of Nursing
Doctoral Candidate
Baltimore MD
USA

**Author Summary:** Ms. Nkimbeng is a well versed burgeoning nurse scholar. In addition to a
number of local and national presentations, she most recently presented at the 2018 Geriatric Society of America conference.

Fourth Author
Patty R. Wilson, PhD, PMHNP, RN
The Johns Hopkins University, School of Nursing
School of Nursing
Director, Wald Center
Baltimore MD
USA

Author Summary: Dr. Wilson is a Psychiatric Nurse Practitioner who has done extensive research targeting community and public health problems related to intimate partner violence and housing instability.

Fifth Author
Sally Rives, MSN, RN
The Johns Hopkins University, School of Nursing
Nurse
Baltimore MD
USA

Author Summary: Ms. Rives completed the Masters Entry into Nursing program at the Johns Hopkins School of Nursing. Ms. Rives is passionate about health disparities research as her ultimate goal is to reduce health disparities among vulnerable populations.

Sixth Author
Oli Ajomagberin, RN
The Johns Hopkins University, School of Nursing
Graduate Student
Baltimore MD
USA

Author Summary: Ms. Ajomagberin is a community nurse who is very active in a variety of health promotion programs in East Baltimore. She collaborated with Dr. Han to present at a conference about the diabetes trial intervention protocol.

Seventh Author
Mohammad Alkawaldeh, PhD, RN
The Johns Hopkins University Center for Cardiovascular and Chronic Care
Research fellow
Baltimore MD
USA

Author Summary: Dr. Alkawaldeh's research interests are diabetes management, chronic care, and older adults. His dissertation study was focused on using mHealth to promote diabetes
management among frail older adults. Dr. Alkawaldeh is in the process of expanding his prior work to also include those with other chronic conditions.

**Eighth Author**
Kelli Grunstra, BSN, RN
The Johns Hopkins University, School of Nursing
Graduate student
Baltimore MD
USA

**Author Summary:** Ms. Grunstra is passionate about health promotion among vulnerable populations. She is eager to reach out to low-income communities to offer health education and screening. She is a public health nurse and is currently working towards an MSN/MPH dual degree to work at system level.

**Ninth Author**
Phyllis Sharps, PhD, MS, BSN, RN, FAAN
The Johns Hopkins University School of Nursing
School of Nursing
Associate Dean of Community Programs and Initiatives, Professor
Baltimore MD
USA

**Author Summary:** Phyllis Sharps, is a Professor and Associate Dean for Community Programs and Initiatives, at the Johns Hopkins University School of Nursing. She leads the Center for Community Initiatives and Scholarship, directing and coordinating community based health and wellness programs, and community-based research initiatives for faculty and students. She is also the director of three community health nurse based centers. She has published numerous articles on improving the reproductive health, reducing violence among African American women.