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Spring 5-2022

Community Health Worker Intervention to Improve HbA1c in Adult Diabetic Patients

Megan Wojtko

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Recommended Citation

Wojtko, Megan, "Community Health Worker Intervention to Improve HbA1c in Adult Diabetic Patients" (2022). *Doctor of Nursing Practice Projects*. 188.
<https://spark.siu.edu/dnpprojects/188>

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Introduction

Community Health Centers (CHC) provide primary care for medically underserved and vulnerable patients. Within this patient population, multiple social determinants of health impact their overall ability to manage common chronic diseases, like Type 2 Diabetes (T2DM). Rates of T2DM are higher across communities of color compared to white populations, including rates of uncontrolled T2DM which often leads to poor outcomes (CDC, 2020). With T2DM frequently being managed by primary care providers and higher rates of uncontrolled T2DM in underserved communities, there is an even greater need for CHCs to address this problem. Building supportive programs outside of the traditional primary care model are pivotal to overcome barriers and help patients better manage their diabetes.

In 2021, a Northeast CHC started the year with approximately 36% of their patients with T2DM having a hemoglobin a1c (HbA1c) that was over 9. A quality strategic goal of the CHC was to decrease this percent to under 30% by the end of the year. To help meet this goal and improve the health of their patient population, a Community Health Worker (CHW) led intervention was developed to help supplement the primary care visit. The scope of this proposed change in the approach to diabetes management was relevant to the organization and the primary care providers as it created a structured additional service to patients with an uncontrolled HbA1c. By training CHWs to provide diabetes education and care coordination, while engaging the patient in self-management goals in between primary care visits, the result should be a decrease in HbA1c across the participants. With the CHWs already being employed at the CHC and the alignment with the organization's goals, this change was a realistic and appropriate method to improve health outcomes. Furthermore, it was easily evaluated by comparing HbA1c before and after the intervention showing the value in this sustainable change.

Literature Review

Key evidence from an extensive review of the literature showed numerous barriers to diabetes management among providers, practices, and patients. Providers experienced time limitations during visits and had inadequate training in how to effectively communicate with patients to help encourage self-management and address difficulties (Siboungheuang et al., 2020). Practices-level barriers included not valuing a trained program for education, case management, collaboration, and social support to assist patients with diabetes, which often left full responsibility back to the primary care provider (Siboungheuang et al., 2020). Patients were also found to have several obstacles, particularly in lower socioeconomic populations with more unmet social needs (Chambers et al., 2021). Chamber et al. (2021) saw an association that those at the highest risk of uncontrolled diabetes had either lack of transportation or at least three other unmet social needs, such as housing quality, housing insecurity, and food insecurity. This combination of barriers showed the need for additional support for the CHC's vulnerable patient populations to effectively improve diabetes outcomes.

Findings from the literature review also supported the importance of CHW led interventions to aid in diabetes management, particularly amongst underserved patients and communities of color. Significant reductions in HbA1c were found in systematic reviews of CHW led interventions for patients with diabetes (Palmas et al., 2015; Trump & Mendenhall, 2017). The interventions were found to be more effective if the CHW were well-trained and the material for T2DM education and self-management came from The American Diabetes Association guidelines and American National Diabetes Education Program (Egbujie et al., 2018). Providers also saw the benefit of CHW led interventions noting the benefit of improved

patient outcomes and engagement in their health with CHWs having additional time and tools to better help with the needs of this population (Collinsworth et al., 2013).

Project Methods

The purpose of this project was to implement a CHW led intervention targeting T2DM patients with HbA1c over 9. Project interventions included creating a supplemental program outside of the primary care visit, that would result in a decrease in HbA1c and improved health outcomes among project participants. The setting was a CHC with a large medically underserved adult patient population with uncontrolled diabetes. The trained CHWs met with the participants at least twice during project implementation and provided structured material and topics for the intervention. This project gained IRB approval prior to implementation.

Evaluation

A report generated within the electronic health record (EHR) identified all patients with diabetes from two health centers who either had a HbA1c over 9 or were overdue for an HbA1c. This was done at the onset of implementation as well as at months one and two of implementation. The reports were used by trained CHWs to call the patients and introduce the intervention as well as schedule the patient to get an updated HbA1c if due. Once the patient accepted participation, the CHW ensured the initial HbA1c was updated in the EHR and tracked progress for the entirety of intervention including the repeat HbA1c at the conclusion. Most participants were captured through this process, and a majority of the interventions occurred over the telephone. The implementation period lasted longer than anticipated to increase the number of participants. The project leader met weekly with the CHWs for the first two months, then biweekly for the remainder of the project. The reports and data were reviewed by the project leader biweekly.

The outcome measures of this project included a comparison of HbA1c prior to the start of patient participation and at least two months after the intervention started. There were 27 participants; however, only 18 concluded within the timeline of the project due to rescheduling of appointments or no shows. All initial HbA1c were over 9, and all participants had at least two sessions with a CHW. The difference of HbA1c was calculated for each participant which ranged from -1.2 to 0.9 at the end of the project. The average difference across participants resulted in a 0.34 decrease in HbA1c. The percent change was also calculated comparing the average initial and final HbA1c, which was an overall 3.04% reduction. The resulting data support the effectiveness of the CHW led intervention for adults with uncontrolled diabetes.

At the conclusion of the project, an informal interview with the CHWs showed long term interest in continuing the intervention. The implementation period was identified as the most difficult as it took time for CHWs to feel comfortable with the diabetes material and to shift to their new role as part of the care team. The CHWs did report that it was more work than anticipated during implementation as provider referrals into the project were very limited initially. CHWs enjoyed the intervention phase and saw benefits of the HbA1c reduction. The CHWs suggested increasing the number of CHW staff if the project was extended to additional health centers within the system.

There were several limitations that occurred. Related to the pandemic, staffing shortages occasionally pulled a CHW into another role impacting their time commitment during the intervention phase. The pandemic also affected the schedule as numerous appointments were rescheduled either by the health center or by the patient. The other outcome was a dependence on telephone communications for the interventions to limit exposures to COVID-19. Lastly, the provider engagement during the implementation phase limited referrals initially into the new

program; however, referrals and buy-in increased during the intervention showing potential for sustainability. Unrelated to the pandemic is the shortened project window that limited the number of participants and long-term follow up.

Impact on Practice

The two health centers that were included in the project were selected as they had the highest number of patients with uncontrolled diabetes. The immediate impact at those health centers were awareness and attention to the uncontrolled diabetes population including outreach and connecting them back to care if appropriate. By empowering CHWs with educational topics and materials, there were more touch points available to patients outside of the primary care visit. The participating patients benefited by an average decrease in their HbA1c. The organization also met their strategic goal of decreasing rates of uncontrolled diabetes to under 30%, by achieving 24.9% at the end of the year. While this was the overall percentage for the organization, the two involved health centers ended the year individually at 24% and 29% still achieving goal. Other contributing factors for these percentage changes included patients coming back to care after deferred care due to the pandemic, educational and training sessions for clinical teams on updated diabetic guidelines, and ongoing population health department efforts.

The predicted long-term impact of this project is a continuation of the intervention as referrals continued past the implementation phase. With reliance on telephone interventions, there will be opportunities for patients from additional health centers to join. While the limitation of number of CHW staff still exists, there is organizational consideration of adding CHW staff to support programs such as this project. The suggested alteration for ongoing implementation would be to add some documentation structure to the interventions that could support reimbursement. One idea is to include the intervention as part of the organization's Chronic Care

Management program; so, services for Medicare patients could get reimbursed and help continue the program across all payers. This will aid in long-term sustainability and support the additional CHW staff that may be needed to cover all health centers in the organization.

Conclusions

Decreasing the rate of uncontrolled diabetes is an important goal for primary care providers. Looking for structured support outside of a provider visit will help patients reach their goals and decrease provider burden. By implementing a CHW intervention, the average HbA1c decreased from 11.2 to 10.9, which was a 3.04% change. Out of the 18 participants, 12 showed a decline in HbA1c, and three participants had over a 1-point decline. The short-term intervention of at least two CHW sessions seemed to improve glycemic control with more significant long-term implications without the stated limitations. Having trained CHWs as part of the care team by educating and empowering patients with uncontrolled diabetes, the organization was able to offer wrap-around services to their vulnerable patient population and ultimately surpass their strategic quality goal. With continued provider and CHW engagement, the intervention successfully transitioned to a long-term program within the organization. Further recommendations for future efforts based on this project is to measure impacts of longer intervention windows as well as following HbA1c for months or years after the intervention for long-term follow up. Outside of a pandemic, there could be a comparison of results across different platforms such as telephone versus in office or group interventions. This would help guide the most effective CHW led program within CHCs to decrease HbA1c in patients with uncontrolled diabetes.