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Culturally Competent Diabetes Self-Management Education Improves HbA_{1c} Levels in Hispanic Patients with Type 2 Diabetes

By

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Diabetes is the seventh leading cause of death worldwide and its prevalence is sharply rising.¹ In 2016 diabetes killed 1.6 million people, a vast increase from less than 1 million in the year 2000.² Type 2 diabetes is caused by insulin resistance that arises from both genetic and environmental influences. Insulin resistance leads to less uptake of glucose into the cells, which increases glucose levels in the blood. Over time an increased amount of sugar in the blood begins to damage organs and vessels which can lead to complications such as blindness, kidney failure, heart attacks, and stroke. Hispanics are the third most affected ethnicity and make up 12.1% of people diagnosed with diabetes.² Type 2 diabetes can be prevented and delayed by maintaining a healthy weight, physical activity, and following a healthy diet.³ Unfortunately, many Hispanic communities lack the resources and health literacy to effectively make these lifestyle changes.

Diabetes self-management education (DSME) provides the tools and support that patients need in order to make more health conscious meal choices, partake in physical activity, set self-management goals, and adhere to glucose monitoring and medication therapy.⁴ DSME has been shown to improve clinical outcomes in patients with type 2 diabetes.⁵ However, there are many barriers that Hispanic populations face in achieving adequate diabetes management and thus culturally competent diabetes self-management education must be provided for more desirable outcomes. This literature review focuses on how certain studies defined and utilized culturally tailored diabetes self-management education and how this improved clinical outcomes within the study participants.

There are several techniques that have been employed to make diabetes self-management programs culturally tailored to Hispanic communities. Among these include leading the self-management courses in Spanish and even more so with an instructor of the same cultural background. Another widely used approach is encouraging participants to bring a family member

to the classes. In addition, many culturally tailored DSME programs hold classes in a community setting instead of health care centers to increase attendance rates. Lastly, incorporating cooking classes or educating patients on healthier eating based on culturally traditional foods has been utilized in culturally tailored DSME courses.

A 2011 randomized control trial utilized a program called Latinos en Control to test whether these interventions could improve glycemic control among low-income Latinos with type 2 diabetes.⁶ This study utilized many of the culturally tailored techniques such as having the courses held in a community center, encouraging family participation, and educating on healthier meals based on a traditional Hispanic diet. The Latinos en control program consisted of patients from five different community health centers that were of Latino ethnicity, greater than 18 years old, had a documented diagnosis of type 2 diabetes and had an HbA_{1c} of greater than 7.5% in the previous 7 months. The Latinos en Control intervention was a yearlong program that consisted of an initial one on one visit at the patient's home followed by 12 weekly sessions followed by eight monthly sessions that were held at the local YMCA. Courses were led by diabetes educators assisted by health educators and nutritionists. There were also lay workers that were trained to assist with this program. It was not clarified whether the courses were led by a bilingual educator. Cooking lessons on making traditional foods healthier were given during most sessions and family members were encouraged to join. This program also promoted physical activity by providing participants with a step counter and were encouraged to increase their steps over time. Participants were also given a glucometer and logs to record their glucose levels, meals, and physical activity regularly. Personalized counseling, feedback and goal setting were provided to each patient. HbA_{1c} was measured in the intervention group and control group

at four months and again at 12 months. This study found a significant decrease in HbA_{1c} in the intervention group at four months, however, this significance decreased at 12 months.⁶

Similarly, another randomized study was performed in 2007 on the Texas-Mexico border with emphasis on a traditional Mexican diet. The education for this program was delivered in Spanish.⁷ Participants were between the age of 35 and 70 and were accompanied by a family member or close friend. This intervention consisted of three months of weekly instructional sessions on nutrition, glucose monitoring, and exercise, followed by six months of biweekly support group meetings. Cultural competency was achieved by having the education delivered by bilingual Mexican American nurses, registered dietitians, and community health workers. Emphasis was put on the traditional Mexican diet by doing cooking demonstrations of healthier versions of typical Mexican food recipes at every session. In addition to this, a field trip to the grocery store was led by a registered dietitian and further advice and instruction was given on how to pick out healthier food options. A large social support effort was also achieved by recruiting family and friends to the interventions and by utilizing community health workers. Participants were found to have significantly lower HbA_{1c} levels compared to the control group at six months and at 12 months, however, there was less of a difference at the 12-month mark compared to the baseline HbA_{1c}.⁷

Utilization of Community Health Workers

Another major component that is prevalent among creating a culturally tailored DSME program is including the involvement of a Community Health Worker (CHW).⁸ Community Health Workers serve as a liaison between healthcare providers and patients. They are community members that bridge the gap between the healthcare system and the patient. They often represent a particular ethnic, cultural, or geographical community.⁹ CHWs are required to

possess a high school diploma and they receive on the job training. They may participate in DSME instruction after receiving training rendered by a certified diabetes educator in diabetes self-management, teaching self-management skills, group facilitation, and emotional support.¹⁰ After proper training, CHWs are considered to be Level 1 Diabetes paraprofessionals according to the Diabetes Educator Practice Guidelines.¹¹ However, services must be supervised by a diabetes educator or a licensed health care provider.¹¹ CHWs greatly aid in making a DSME program more culturally tailored due to the CHW often being of the same culture as the community they serve, speaking the same language, and potentially having similar religious beliefs, possessing particular mannerisms, customs, and social beliefs that may correspond to the community.

There is emerging literature investigating the effectiveness of the utilization of community health workers in reducing HbA_{1c} within a specified time frame. One study measured outcomes at 18 months after a CHW led DSME program.¹² The aim of this study was to identify whether community health workers can provide culturally competent DSME to the Latino population. In this intervention, the CHWs were each Latinas fluent in Spanish who were recruited from the Detroit community and held a GED or high school diploma. They completed greater than 160 hours of CHW training and greater than 80 hours of diabetes education. This study involved 222 patients who were randomly assigned to a CHW led six month DSME program or to a group with enhanced usual care. After this six month period, the CHW led group was further randomized to 12 months of CHW delivered monthly telephone calls or 12 months of weekly sessions delivered by peer leaders with telephone outreach to those who did not attend. Participants were selected based on self-identifying as Latino, being 21 years or older, and having the diagnosis of diabetes. Exclusion criteria included physical limitations preventing

participation, terminal health conditions, serious psychiatric illness, or self-reported drug or alcohol abuse. At six months of this intervention, there was a statistically significant improvement in HbA_{1c} for the group receiving CHW led DSME when compared to the enhanced usual care group. These improvements were well maintained for up to 18 months within the group attending weekly peer led group sessions. This study carries more strength than others because it is one of the few studies that exceeds a short-term study of 6-12 months and demonstrates continued maintenance of HbA_{1c} in participants at the end of the DSME courses with continued support. However, a limitation of this study is the lack of generalizability due to the participants strictly being recruited from one federally qualified health center in Detroit.¹²

Another study taking place in Detroit, analyzed the effects of a community based, culturally tailored diabetes education program among the African American and Latino populations with type 2 diabetes.¹³ This intervention chose to employ CHWs, also referred to as Family Health Advocates, as one of the many components to make this program culturally tailored. For the Latino population of this study, a curriculum was created and called “Camino a la Salud”.¹³ This curriculum aimed to educate patients on how to reduce risk factors associated with the complications of diabetes. Classes were led by CHWs in both English and Spanish and participants were encouraged to bring a family member. A total of five 2-hour group meetings were conducted every four weeks at a community location. One-hundred fifty African Americans and Latinos with type 2 diabetes were recruited for this study from three different health care systems in Detroit. There was a significant improvement in post-intervention dietary, behavior, and physical activity knowledge and a statistically significant improvement in HbA_{1c} levels compared to the control group. This intervention demonstrated that the use of community health workers improves patients’ overall knowledge of diabetes management. However, a large

limitation to the study was that the changes in knowledge of physical activity and diet were self-reported.

Another randomized control trial of a culturally tailored diabetes education and management program led by a community health worker was performed to analyze the impact on HbA_{1c} in uninsured Mexican Americans.¹⁴ Uninsured Mexican Americans that were patients of a Dallas, Texas clinic and that were between the ages of 18 and 75 with type 2 diabetes were recruited for this study. Exclusion criteria was pregnancy and advanced type 2 diabetes complications. One hundred-eighty participants were randomly divided and placed into a control and intervention group. The intervention group participated in a Community Diabetes Education program led by a bilingual Mexican American CHW. There was a significant improvement in HbA_{1c} over 12 months for the intervention group when compared to the control group as well as a statistically significant improvement when compared to the intervention baseline. This study further supports the effectiveness of CHWs in providing culturally tailored DSME in Hispanic populations.¹⁴

Another similar study, *A Mexican American Trial of Community Health Workers: A Randomized Control Trial of a Community Health Worker Intervention for Mexican Americans with Type 2 Diabetes Mellitus*, yielded similar results.¹⁵ This RCT also demonstrated that utilizing a community health worker aided in making a diabetes self-management program more culturally tailored and resulted in a statistically significant lowering of HbA_{1c} levels when compared to a control group after one to two years.¹⁵

Conclusion

Diabetes education programs that are culturally tailored by involving the utilization of a Community Health Worker of the same ethnicity, that encourage family involvement, that

include curriculum based on Hispanic cultural beliefs and traditions, and that involve home visits, improves glycemic control among Hispanic communities with type 2 diabetes. Utilizing a Community Health Worker decreases cultural barriers that may be experienced by the patient, better addresses literacy levels and allows for classes to be taught in the same language as the patient. Employing a CHW also allows for greater access to care by having the ability and time to make home visits and hold group classes at a community location. CHWs are an economical resource to employ the components mentioned above that make a DSME program culturally tailored to the Hispanic community.

Based on the articles reviewed in this paper and other articles available on this subject matter, there is a reoccurring theme of studies being limited to a short time frame. The longest study continued for two years, however, many of them were limited to 12 months. It was also noticed in a few of the interventions that there was more of a statistically significant reduction in HbA_{1c} among participants at the six month measurement when compared to the 12 month measurement. This poses the question: why aren't there more long term studies? Another question that arose was: do participants maintain healthy lifestyle changes after the DSME course ends? This is an important question because it is unrealistic for patients to continue going to DSME courses continuously for the rest of their lives. One way to determine this could potentially be to follow up on a yearly basis after patients complete a yearlong intensive program in addition to offering optional monthly support groups. A third question is whether the DSME attrition rate among the Hispanic population can be lowered. This is potentially the reason for short-term studies due to a higher attrition rate as the length of the study progresses. Further research on the utilization of home visits may begin to address this dilemma.

In conclusion, culturally tailored diabetes self-management education does improve HbA_{1c} levels within the Hispanic population, at least in the short term. The techniques used to make DSME culturally tailored as mentioned above, should be considered when creating and utilizing DSME programs for Latino populations. Utilizing a Community Health Worker is potentially the culturally tailoring technique with the greatest yield. Using a CHW is also cost effective due to the ability for on the job training, which can lead to increased numbers of CHWs and therefore greater access to diabetes education related services for patients in underserved communities.

An increased utilization of CHWs to provide culturally competent diabetes education to the Hispanic population can improve clinical practice. Many community health clinics utilize the medical home model. This model promotes an interprofessional team approach for providing healthcare. This is a model that should be employing CHWs as part of the healthcare team to deliver diabetes education in order to enhance diabetes management within this population. The techniques used to make diabetes education culturally tailored should be acknowledged by every member of the healthcare team involved with diabetes management, including primary health care providers. There are a great number of dedicated practitioners that educate their patients on diabetes management, however this education is often within a 15-minute office visit appointment and may not always be culturally tailored. Education from a patient's primary care provider is great reinforcement, however, practitioners should consider referral to a culturally tailored DSME program.

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