Changes in Self-management During the COVID-19 Pandemic Among Adults with Type 2 Diabetes at a Federally Qualified Health Center

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Abstract

The COVID-19 pandemic affected how adults with diabetes perform self-management, and impacts may be greater among vulnerable populations. We assessed the impact of the pandemic on diabetes self-management among adults with type 2 diabetes at a Federally Qualified Health Center. Participants were surveyed by phone in Spanish and English from July to October of 2020. Most respondents (74%) were Latino and preferred to speak Spanish, with mean age of 54 years and mean HbA1c of 9.2%. Fifty-three percent reported less physical activity during the pandemic. While 43% had more difficulty obtaining healthy food, 38% reported eating more healthfully. Sixty-one percent had increased difficulty accessing medical care. Many felt more socially isolated (49%) and stressed (51%). Changes in diabetes self-management were both positive and negative for majority Latino patients in this low-resource community, which may require tailored approaches to mitigate negative impacts of the pandemic on physical and mental health.

Keywords Type 2 diabetes · Self-management · Health behavior · Pandemic · Latino · Diabetes education

Background

Beginning in March 2020, stay-at-home orders and social distancing due to the COVID-19 pandemic disrupted many aspects of life in the United States. Changes to business and clinic operations, employment, and financial impacts from the pandemic affected how people with diabetes obtained food, medical care, and managed their day-to-day diabetes self-management. These impacts were especially pronounced in low-income communities and among Latino adults who experienced more COVID-19 related job loss [1], and higher rates of COVID-19 infections, hospitalizations, and deaths compared to non-Latino adults [2]. These differences may be explained, in part, by factors such as inability to avoid workplace exposures, poor access to medical care and health information, population density, intergenerational living within the same household, and income [3, 4]. Understanding how adults with diabetes who live in low-resource communities managed diabetes during the COVID-19 pandemic could reveal ways to better support these patients and mitigate negative impacts on health outcomes during care

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disruptions in the future. This is especially important as people with diabetes are likely to have worse illness severity and increased mortality from COVID-19 [5]. Thus, in this study we evaluated the impact of the pandemic on diabetes self-management, access to critical resources, and mental health reported by adults with type 2 diabetes in a diverse, low-income community.

Methods

Participants in an ongoing diabetes self-management education and support clinical trial at a Federally Qualified Health Center serving a primarily Latino community in Detroit, Michigan were contacted by phone in Spanish or English and invited to complete surveys. Between July and October of 2020, 72 patients were contacted, and 61 (85%) completed telephone surveys. Surveys assessed participants' experiences during the COVID-19 pandemic and associated changes in work, diabetes-related medical and self-care, and mental health. HbA1c lab results were collected from participants' medical records. Summary statistics were computed for patient characteristics and survey responses and presented with mean, standard deviation and frequency as applicable. This study was approved by the University of Pittsburgh internal review board.

Results

Seventy-four percent of respondents identified as Latino, with Spanish as their preferred language (Table 1). Respondents' mean age was 54.2 (SD 10.2) years, 62% were female, and most (57%) had less than a high school degree. Mean HbA1c was 9.2% (SD 1.6), and 56% used insulin. Five patients reported having tested positive for COVID-19, and seven lived with someone who had tested positive. Of 33 respondents working outside the home before COVID-19, 61% had lost their jobs or now worked fewer hours. When asked how diabetes management behaviors changed during the pandemic, 53% reported less physical activity, while 25% reported more (Fig. 1). Although 43% reported more difficulty obtaining healthy food, only 18% percent reported eating food that was less healthy, while 38% reported consuming more healthy food. Most (80%) reported no change in how often they took medications. Many participants (61%) reported increased difficulty accessing medical care. Those reporting difficulty accessing care were older than those who reported no change or less difficulty (mean age 59.7 [SD 10.1] vs. 50.7 [SD 8.6] years, respectively). Forty-one percent of participants felt more worried about managing their diabetes due to pandemic-related changes, and many felt more isolated (49%) and stressed (51%).

Table 1 Participant characteristics

Age; Mean (SD)	54.2 (10.2)
Female; n(%)	38 (62%)
Race/Ethnicity; n(%)	
Latino	38 (62%)
Black/African American, non-Latino	12 (20%)
White, Latino	4 (7%)
American Indian/Alaska Native, Latino	3 (5%)
Other, non-Latino	3 (5%)
White, non-Latino	1 (2%)
Less than high school degree; n (%)	35 (57%)
Income; n (%)	
Under $5,000	4 (7%)
$5,000-$14,999	12 (20%)
$15,000-$24,999	12 (20%)
$25,000-$49,999	10 (16%)
Over $50,000	1 (2%)
Don't know/refused	22 (36%)
Prefer Spanish as primary language; n (%)	45 (74%)
HbA1c; Mean (SD)	9.2% (1.6)
Use insulin; n (%)	34 (56%)

Discussion

This study of adults with diabetes in a diverse, low-resource community found that nearly one-third of respondents reported increases in healthy activities such as diet and physical activity during the pandemic. However, half of participants reported negative impacts on physical activity and mental health, and many had increased difficulty accessing food and medical care.

Little comparable information is published to date on the impact of the pandemic on diabetes self-management, especially among disproportionately affected groups such as urban predominantly Latino communities. Direct comparisons of our results to other studies on the impact of the pandemic on diabetes care are limited by differences in exact measures of self-management behavior, but overall trends appear similar between our results and studies in other populations. One analysis of health insurance claims among a nationally representative sample in the US found a decrease in diabetes-related outpatient utilization and testing during the pandemic, without changes in medication fills or glycemic control, which mirrors our participants' reported difficulty accessing medical care but stable medication adherence [6]. In a survey of adults with type 2 diabetes in Arkansas from July to August 2020, 45% of patients reported less exercise and 38% reported less healthy eating [7]. Another survey of adults with diabetes from across the United States performed in April 2020
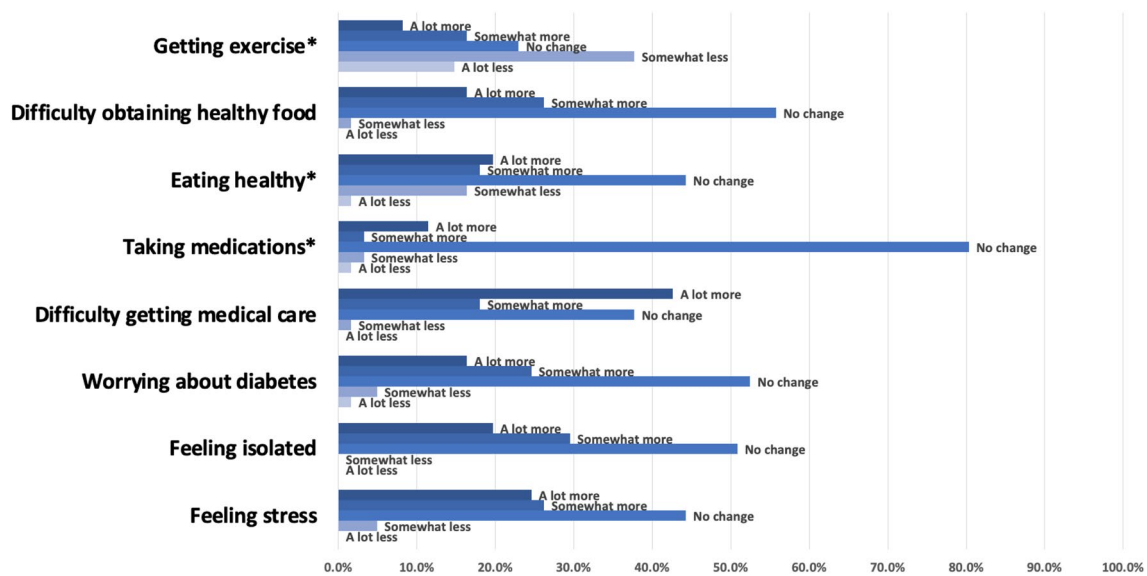
Fig. 1 Changes in Diabetes Self-Management Behaviors. *Self-management behaviors for which "a lot less" and "somewhat less" indicate negative change with behaviors performed less frequently

found that 57% reported decreased physical activity and 35% reported difficulty accessing healthy food [8]. In addition, many participants reported increased difficulty managing diabetes, stress, and isolation, similar to our study [8]. Participants in the two survey studies were primarily white, non-Latino, and had higher levels of income and education, with lower HbA1c than those in our study [7, 8]. Thus, unhealthy changes in self-management behavior may have a larger impact on our population, whose glycemic control was worse at baseline. While relatively few participants in the national survey reported financial concern related to the pandemic, more than half of participants in our study who worked at baseline had employment negatively impacted, thus making financial limitations a potentially larger barrier to accessing critical resources in this population [8]. In addition, many participants in both the national and Arkansas-based studies reported using technology for diabetes care, including continuous glucose monitoring and telemedicine visits, while those in low-resource communities such as in our study did not typically use these technologies prior to the pandemic [7, 8].

Limitations of this study include a small sample size in a single center, which may limit generalizability, and lack of direct measures of social support and changes in glycemic control during the study period. In addition, this study was cross-sectional, thus changes over the course of the pandemic could not be assess in a longitudinal manner. However, the strength of this study is provision of novel insight into diabetes self-management changes during the COVID-19 pandemic among a population of predominantly Latino, Spanish-speaking patients in a low-resource community.

Socioeconomic status, culture, and language differences may require tailored approaches to address the effects of the pandemic on physical and mental health for vulnerable populations. Low income, Latino ethnicity, a preferred language other than English, and older age are all associated with lower telemedicine video or phone visit completion rates [9]. This aligns with findings in our study, in which more than half of participants reported difficulty accessing medical care, despite available telemedicine options at the center where most received care. As prior studies of diabetes telemedicine interventions have demonstrated efficacy among diverse populations including Latino patients, one strategy to reduce disruptions in care for vulnerable populations could be providing tailored support to patients navigating technological or language barriers to using telemedicine [10]. Additionally, mailing printed low-literacy, language-appropriate self-management education materials may help patients who speak another language or lack internet access to navigate changes to eating and activity routines. Support for self-monitoring of blood glucose among populations with less access to diabetes technology, such as continuous glucose monitoring, may also warrant specific focus in bolstering self-management behavior during care disruptions. Connecting patients with financial and food security concerns to community resources such as food banks could improve access to the food and supplies needed to maintain healthy diabetes management. Finally, phone-based support groups or counseling could address social isolation and stress in populations with barriers to video telemedicine. The results of this study highlight the ways that diabetes self-management programs that serve unique populations

can adapt to help patients overcome similar care disruptions in the future.

New Contribution to the Literature

To our knowledge, this study is the first to examine the impact of the pandemic on diabetes self-management among predominantly Latino, Spanish-speaking patients in a low-resource urban community in the United States. By providing insight into both positive and negative changes in diabetes management, this work can inform tailored approaches to mitigate negative impacts on physical and mental health and preserve healthy habits for patients with diabetes in this unique population.

Declarations

Conflict of interest The authors report no potential conflicts of interest relevant to this article.

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