Using photovoice to promote diabetes self-management in Latino patients

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Cite this as: *TBM* 2019;9:1151–1156
doi: 10.1093/tbm/ibz082

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Abstract

Innovative, patient-centered interventions that employ novel educational methods are needed to address the burden of diabetes in the growing Latino population. Objective of this study was to assess the acceptability, feasibility, and perceived utility of photovoice in a diabetes self-management intervention for Latinos. Thirty-seven adults with diabetes attended a church-based self-management education program that included a photovoice exercise where participants were asked to take photographs to illustrate their successes and challenges in diabetes management. Participants discussed their photographs in the group classes and evaluated the exercise in an exit survey. Photographs and discussion notes were analyzed for prevalent themes. We measured participant participation in the photovoice activity, content of photographs, themes of the discussions that were prompted by the photographs in class, and participants' satisfaction with the photovoice exercise. Of the 37 participants, 70% took photos and 65% shared them in class. Photos depicted family, social gatherings, diet, exercise, the neighborhood, diabetes supplies and medications, and home life. Almost all the group discussions involved aspects of social support, including giving advice, empathizing, or providing motivation for self-care to one another. Eighty-six percent reported learning how to better manage their diabetes from others' photos; 93% noted sharing photos made them feel connected to the group. In a diabetes self-management education program, photovoice was well received by Latino adults and provided a vehicle to receive and provide social support in self-care. This trial was registered at clinicaltrials.gov with identifier NCT01288300.

Keywords

Hispanic health, Diabetes, Community-based interventions, Community-based participatory research (CBPR), Social support

INTRODUCTION

Photovoice is a community-based participatory research (CBPR) methodology that engages community members through the use of photographs and storytelling [1,2]. Photovoice may facilitate diabetes self-management education and support persons with limited literacy [3]. However, few studies have used photovoice as an active part of a disease management intervention. We used photovoice as a part of a church-based diabetes self-management education intervention for Latino adults and found that the

Implications

Practice: Photovoice may be used to promote social cohesion and support in group-based disease management education programs.

Policy: Policymakers should explore financial incentives for health systems providing education programs that utilize innovative tools to promote engagement in self-management among patients with diabetes.

Research: Future research should assess the clinical, behavioral, and financial outcomes of using technology such as photovoice in pragmatic or randomized controlled trials.

program led to improvements in participants' diet and participation in exercise [4]. This article aims to describe the acceptability, feasibility, and perceived utility of photovoice in our diabetes self-management intervention.

MATERIALS AND METHODS

Using CBPR, we partnered with two churches in a low-income, Mexican-American immigrant community in Chicago to conduct a randomized, controlled trial of a church-based intervention on diabetes outcomes [4]. Details on the study design and the main findings have been reported previously [4]. One-hundred English- or Spanish-speaking adults who reported a diagnosis of diabetes were randomized to our 8-week diabetes self-management education intervention or enhanced usual care. Intervention participants were given disposable film cameras to take photographs illustrating their successes and challenges in diabetes self-management. The photographs were used in the weekly group class to facilitate discussions around problem solving to promote social support and behavior change. Classes were led by a trained community lay leader. The first 30 min of class were spent on the photovoice discussion and subsequent 60 min were spent on predetermined

diabetes self-management educational content. Informed consent was obtained from all participants in the study.

Main measures

We tracked participants' participation in the photovoice exercise and assessed satisfaction through surveys. We assessed the content of each photo. The class leader recorded notes of the group discussion.

Analysis

We tabulated descriptive statistics of participation and satisfaction. The lead author and two research assistants (RAs) iteratively created coding guidelines and coded the photos. The lead author and one RA also created a codebook of the class leaders' discussion notes and coded all notes by consensus using grounded theory [5].

RESULTS

Of 50 participants randomized to the intervention, 37 (75%) attended at least one class and received a camera for the photovoice exercise, and 26 (52%) took photos. Participants took a total of 503 photographs. Table 1 describes the most prevalent themes of the photographs. Example photographs are available at http://chicagodiabetesresearch.org/research/picture-good-health_photovoice/.

Thirty of the 37 participants (81%) who attended at least one class completed the exit survey. Eighty-two percent of respondents noted they enjoyed talking about their photos in class, 86% reported having learned about better managing their diabetes from other participants' photos, 82% reported having gained a lot of confidence in managing their diabetes from talking about the photos, 82% believed the photovoice discussion helped them better manage their diabetes, and 93% believed sharing photos in class made them feel more connected to the people in the group.

Table 1 | Content Analysis of Participants' Photographs (*n* = 503)^a

	<i>N</i> = 503
Subjects and themes	<i>n</i> (%)
People, children, social events	398 (79)
People, including family, friends, community members	237 (47)
Social events or gatherings	92 (18)
Children	69 (14)
Nutrition and exercise	236 (47)
Food	121 (24)
People exercising or exercise equipment	37 (7)
Water bottles and people actively drinking water	33 (7)
Soft drinks	32 (6)
Kitchenware (e.g., knives, plates, pots or pans)	13 (3)
Neighborhood and built environment	195 (39)
Neighborhood and surroundings	73 (15)
Outdoor green spaces including parks and gardens	68 (14)
Bikes, buses, trains, cars, modes of transportation	37 (7)
Billboards, window advertisements, taxi, or bus advertisements	16 (3)
Grocery stores, convenience stores	1 (0.2)
Diabetes specific	165 (33)
Diabetes self-management class	63 (13)
Educational material used for class or learning outside of classes	45 (9)
Diabetes supplies (strips, glucometers, lancets, scales)	34 (7)
Medications including pills, insulin, and herbal or vitamin supplements	18 (4)
Photos of participants' hands and feet	5 (1)
Home life	124 (25)
Interior and exterior of home	95 (19)
Pets or animals	16 (3)
Children's toys	13 (3%)
Religious figures, iconography, or ceremonies	41 (8)
Electronics excluding glucometers (e.g., laptops, computers, cell phones, televisions, radios)	40 (8)
Participant workplaces (e.g., work desk, cubicle)	3 (0.6)

^aOf the 26 participants who took photographs, two participants' photos were not available for analysis. *N* = 503 is the total number of photos analyzed, which were taken by 24 of the participants; 36 photographs were dark or blurry or had an error in development. Percentages do not add up to 100 due to overlapping themes in photos.

Table 2 | Themes From Photovoice Group Discussion on Diabetes Self-Management, Social Support, and Emotional Health

Theme	Description of photograph	Participant's comments about photo ^a	Classroom discussion of photograph
Participation in self-care behavior	Photo of a box full of bags of fried street food, such as chips or <i>chicharron</i> (fried pork rind)	<ul style="list-style-type: none"> •“Junk food is nothing but fats; it is venom for the body.” •“I shouldn't eat junk food because it has a lot of salt and fats.” 	•“Not only diabetes patients but everyone should take care of their health.”
	Photo of a woman sitting on a bed, holding a case with a glucometer inside	<ul style="list-style-type: none"> •“It is very important to have a blood exam in order to know our blood sugar level.” •“I have to check my blood sugar level twice daily. That way I know if my blood sugar level goes up.” 	•“It is very important to know our blood sugar level.”
Preventing and living with complications	Photo of a pair of feet on a tile floor	<ul style="list-style-type: none"> •“The participant loves herself and takes care of her feet because she does not want anything to happen to them.” •“The picture reminds me that I need to take care of me.” 	•“Diabetic people should never be barefoot.”
	Photo of a sign for a dental clinic as seen from the street	<ul style="list-style-type: none"> •“We need to take care of our teeth and go to the clinic for regular care because I already had a bad experience with a molar.” •“Little by little, I have been losing my teeth; I think it's because of my diabetes.” 	•“It is very important to have a regular exam to check our teeth, gums, and molars. Also, to watch for the way that we eat.”
Facilitators and motivators of diabetes self-care	Photo of a table with food and drinks. There are people partially in the photo	<ul style="list-style-type: none"> •“A family get-together. They ate <i>sopes</i> [traditional Mexican dish] and walked after eating them.” •“My family is very important for me.” 	•“Family is always important.”
	Photo taken of a framed photo of his family of more than nine people	•“If we don't take care of ourselves, we will not be in that picture anymore. I would like to have one in the future with everybody and no one missing.”	•“If we don't take care of ourselves then there will be no picture with us in it in the future and we will not be able to achieve our goals.”
	Photo of many small flowers in an outdoor flowerbed	<ul style="list-style-type: none"> •“Mother nature in full development. We see how an insignificant seed can turn into a beautiful flower.” •“It's important because it teaches me that if one sets a goal we can achieve it and shine and look beautiful like a flower.” 	<ul style="list-style-type: none"> •“Green means life and this has different colors and reflects a diversity of all the colors. Each color has a different meaning and how we are part of nature and we can be beautiful as a flower” •“People have to see the change in our lives with these classes” •“When diagnosed with diabetes, everything turned grey but now my life is full of colors” •“If I don't water these flowers they will die so if I don't take care of myself and take my medication then I can also die.”
	Photo of a medium-sized brown dog lying next to a person on a couch	<ul style="list-style-type: none"> •“A pet. It helps me to exercise. It is important for my diabetes to keep my sugar down.” •“Exercise is very important for my health.” 	•“It is very important to exercise. It is good if you can do it with your pet.”
	Photo of the exterior of a local church taken from the sidewalk	<ul style="list-style-type: none"> •“For me it represents life, faith, hope. When I come here I feel in peace and the best place to meditate because I feel in peace” •“It helps me to maintain my faith and that no matter how tough life is there is always hope and a light to follow.” 	<ul style="list-style-type: none"> •“Thanks to God I found this place, I feel comfortable when I am in mass and receiving the invitations for this class” •“No matter the circumstances in life, God gives us things that we can always achieve and overcome” •“Any church independent of the religion we profess, helps us because God, our father, always helps us”

Table 2 | Continued

Theme	Description of photograph	Participant's comments about photo ^a	Classroom discussion of photograph
Successes in diabetes self-care	Photo of a bike leaning against many quadricycles	<ul style="list-style-type: none"> •“He was in a 40-mile bike race. He stopped at Navy Pier to drink water.” •“His passion is riding bicycles” 	•“He does lots of exercise that keep him healthy and he is doing well.”
	Photo of a bowl of apples, peaches, and grapes	<ul style="list-style-type: none"> •“We should always have fruits at home. By eating fruits and vegetables we can improve our life style.” •“It is important because instead of eating junk food she eats fruit.” 	•“Having fruit on the table promotes family unity. However, we also need to be careful when eating fruits because some fruits have a lot of sugar. Fruits must be on our diet because they have fiber.”
Barriers to diabetes self-care	Photo of a summer backyard party with many adults and children present	<ul style="list-style-type: none"> •“Picture of a party, since it's summer, in which we all eat a lot. I try eating something healthy and have to avoid eating a lot at a party.” •“If I don't take care of myself I can have other diseases and not enjoy life with our kids.” 	<ul style="list-style-type: none"> •“We would be on dialysis” •“Our family will be with us and not enjoying with us” •“A lot of temptation due to so many parties that take place in the summer” •“Drink water instead of beer” •“To be more united with the family and avoid eating too much.”
	Photo of a slice of cake	<ul style="list-style-type: none"> •“It helps to remind myself that eating does not help at all. On the contrary, it damages my health even more” •“I have been able to overcome my problems without eating and confront them” 	<ul style="list-style-type: none"> •“We have to eat in small quantities” •“It is our weakness and usually we look for sweets or cakes to make ourselves feel happy” •“Some of us can live without them.”
	Photo of bread	•“To remind her that she needs to eat one piece of bread and not two.”	•“How much they have [struggled] to stop eating bread especially if it's Mexican sweet bread.”
Social support			
Group advice	Photo of a woman drinking from a small water bottle	<ul style="list-style-type: none"> •“Drinking water.” •“It's better to drink and choose water than [soda].” 	•“Hydrate your body – water hydrates your body a lot better than any other liquid.”
Group empathy	Photo of several images of Virgin Mary on the wall and in an altar.	<ul style="list-style-type: none"> •“It is a photograph of his daughter who died three years ago. His mother gave him a virgin Mary.” •“I have the picture with me at all times and I just wanted to share it with you.” 	•“Thanks for sharing your pain and your loss. [Participants] shared their own experiences of losing a loved one.”
Information sharing	Photo of a smiling woman standing next to a portable stereo and a large television	<ul style="list-style-type: none"> •“Yoga teacher. She has encouraged her and helped her for the past seven years.” •“She has been following her teacher to all places where she works because she likes to do yoga.” 	•“That is great to have a teacher like her.”
Group motivation	Photo of three women in a class.	<ul style="list-style-type: none"> •“She receives motivation from her classmates. She feels that they all speak the same language with the class leader. She is very happy with her job.” •“Because she receives support and inspiration from everyone in this program.” 	•“Being part of a group helps them to be stronger. Learning how to improve their life style. Together, they are fighting to have a better life.”
Importance of social support	Photo of the class leader and two other participants during class	<ul style="list-style-type: none"> •“The exchange of views among group members helps all of us to stay strong and healthy.” •“Being part of this group helps us to learn a lot about diabetes.” 	•“It is very important that we support each other and the exchange of ideas is also very important.”
Sharing of goods	Photo of a couple sitting on a couch with a walker nearby	<ul style="list-style-type: none"> •“Her parents. Her dad lost his left leg and some toes. Both of them have diabetes. Both use a wheelchair but her dad uses it only when he goes out.” •“She brought a picture of her parents because God has allowed them to live a long life.” 	•“They asked her if her dad uses a walker because some of the participants might have some.”

Table 2 | Continued

Theme	Description of photograph	Participant's comments about photo ^a	Classroom discussion of photograph
Mental and emotional health			
Concern for family developing diabetes	Photo of an adolescent boy smiling and standing next to a refrigerator	<ul style="list-style-type: none"> •“The picture is of her son and how she is afraid that he will have diabetes in the future.” •“Her son is 13 years old, he is healthy but with some extra pounds.” 	•“He looks older than he is and it is a good thing that he doesn't have diabetes.”
Ways to cope with stress	Photo of trees in a forest with a deer nearby	<ul style="list-style-type: none"> •“I am in the forest where I am peaceful and quiet. There, I can exercise and relax from all the stress.” •“It is very relaxing being in the forest.” 	•“That is a great picture and it is very relaxing to walk in the forest.”
Self-motivation	Photo of a statue holding a pack of cigarettes inside an empty storefront	<ul style="list-style-type: none"> •“At a job, I decided to smoke less.” •“To remember I decided to start smoking less because this would help my health.” 	•“It is a good way to start smoking less by looking at the picture. It is good to stop smoking even though it is hard to quit.”

^aThe comments are in first person and third person depending on how the class leader noted the participant's comments.

Sixty-five photographs taken by 24 participants were discussed in the group classes. More than half of the discussed photos focused on diabetes self-care (Table 2). Almost all discussed photos led to participants supporting others in the group, including (a) advising or sharing information, (b) empathizing, (c) motivating for self-care, or (d) offering instrumental support. One third of the photo discussions involved emotional and mental health.

DISCUSSION

In this article, we report findings from a process evaluation of the feasibility and acceptability of the use of photovoice as a part of a diabetes self-management intervention. We found that most subjects participated in and were highly satisfied with the photovoice exercise. About three quarters of participants who attended the intervention class took photos and more than half shared photos in class. Participants reported feeling more confident in diabetes self-management and learning from the discussion of others' photos. Future studies may consider using current, accessible technology, such as phone cameras or other digital media (e.g., Instagram) if available.

Almost every photo discussion led to participants providing support to others, such as giving advice, sharing information, empathizing, or encouraging self-care. Participants noted that sharing photos made them feel more connected to the group. Social support may play an especially important role among Latinos with diabetes who may be geographically isolated from their family and support networks [6]. Emotional and mental health were often discussed, and thus integrating behavioral health services into diabetes self-management education programs for Latinos with diabetes may be particularly important.

Participants' photos reflected the importance of social and family support, healthy eating, exercise, and the patient's social and built environments in daily life with diabetes. Emphasizing these aspects of daily life may be important for patient-centered education and support in diabetes self-care for Latinos.

Our pilot testing of the church-based education program found improvements in intervention patients' diet and exercise habits but no difference in glycemic control compared to control patients [4]. Our feasibility and acceptability analysis of our use of photovoice in our intervention is valuable in informing other researchers that this approach could be used within a different trial design that might then result in improving clinical outcomes. A randomized study design that delivers the same educational content but with one arm that uses photovoice and one arm that does not may be needed to truly evaluate the effect of this tool.

CONCLUSIONS

Photovoice stimulated conversations around successes and facilitators of diabetes self-care and provided a vehicle to receive and provide support, and promote social cohesion within the group. This low literacy tool may be used with other populations and disease processes where self-care and social support are integral to improving health outcomes and well-being.

Acknowledgements: We would like to thank our partnering churches and Esperanza Health Centers for donating their space and personnel for our study. We would like to thank the Little Village Community Advisory Board members who were critical to the design of the study: John C. Acevedo, Laura Garcia, Azucena Urbina, and Frances Nance. We would like to thank the RAs who made this study possible: Maria Acevedo, Jason Espinoza, Maritza Gómez, Alexis Lopez, Ana Luisa Piña, Denise Salinas, Fernando Vázquez, and Helio Zapata. We are also indebted to our class leaders Javier Ávila, María Medina, Claudia Velazquez, and Samuel Villaseñor and to the Taller de José compañeros for accompanying and providing patient navigation services to our participants. We are grateful to Jazzmin Cooper and Jefferine

Li for their assistance in formatting the figures and tables for this manuscript and Valerie Press for her comments on an earlier draft. This research was supported by grants from University of Chicago Clinical and Translational Science Award (UL1RR024999), the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Diabetes Research and Training Center (P60 DK20595), and the Chicago Center for Diabetes Translation Research (P30 DK092949). Dr. Baig was supported by an NIDDK Mentored Patient-Oriented Career Development Award (K23 DK087903-01A1) and the Chicago Center for Diabetes Translation Research (P30 DK092949). Dr. Chin was supported by an NIDDK Midcareer Investigator Award in Patient-Oriented Research (K24 DK071933). The local Walgreens provided a discount on photograph development for the intervention classes. Bayer provided some free boxes of test strips for participants.

Compliance with Ethical Standards

Conflict of Interest: The authors have no conflict of interest to report.

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