Effect of a Group Adherence Intervention for Mexican-American Older Adults With Type 2 Diabetes

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OBJECTIVE. I evaluated the effect of a culturally tailored, peer-led support group intervention on improvement in adherence behaviors of Mexican-American older adults with type 2 diabetes mellitus and obtained feedback on the cultural relevance of the manual that structured the intervention.

METHOD. The one-group pretest–posttest design used five self-report questionnaires and blood testing to measure change among 4 men and 12 women, ages 60–85.

RESULTS. Empowerment, self-efficacy, and attitude were highly significant at 2-, 4-, and 6-mo posttests. Glycosylated hemoglobin test results were significant at p < .05 between pretest and 2-mo posttest with a stabilizing effect on the 6-mo posttest.

CONCLUSION. Mexican-American older adults' adherence may improve with a culturally sensitive, structured peer-led program with indirect consultation from an occupational therapist.

Diabetes complications arise from poor self-management and could be prevented or delayed with improvement in client adherence to a recommended intensive diabetes regimen. The Centers for Disease Control and Prevention (2011) has anticipated that by 2050, as many as one-third of the U.S. population may acquire diabetes, depending on U.S. lifestyles; 90%–95% of people with diabetes have type 2 diabetes mellitus. Among the 10 countries with the highest prevalence of diabetes, the United States has the third highest prevalence (World Health Organization [WHO], 2011). Because this situation has much to do with lifestyle choices that could be changed, the WHO has called for concentrated prevention efforts to improve the future of people all over the globe.

The setting for this study was Texas, where in 2008 the prevalence of diabetes was 11.1% for Hispanics and was projected to double by 2040. Of the people with diabetes, 34.8% were ≥65 yr old (Texas Diabetes Council, 2010). Texas also had the highest rate of uninsured people in the country in 2007: At the time, 31% of employed Texans (5.59 million) lacked insurance coverage (Texas Medical Association, n.d.).

Baum (1980) suggested in her Eleanor Clarke Slagle lecture that the occupational therapy profession should transition to a wellness model to provide interventions for prevention of disease. That transition process has evolved slowly. Research that justifies a new role for occupational therapy practitioners calls for development of secondary intervention programs for people with diabetes (Pyatak, 2010, 2011). Most U.S. occupational therapists treat the tertiary complications that follow uncontrolled diabetes, because treatments for the disabilities that ensue are reimbursed by third-party payers. Self-care activities related to prevention of diabetes complications may not be reimbursable. However, the Occupational Therapy Practice Framework: Domain and Process (2nd ed.; American...
Occupational Therapy Association [AOTA], 2008), which anticipates current and future practice in occupational therapy, projects that practitioners will serve individuals, groups, and populations. Therefore, the concepts discussed in this article are not too futuristic, even though mechanisms for reimbursement may not yet be in place.

Occupational therapists have the expertise to empower people with diabetes to make relevant lifestyle modifications and health behavior changes necessary to gain consistent good glycemic control (Haltiwanger & Brutus, 2011; Pyatak, 2010). Pyatak (2010) provided a comprehensive systematic review that highlighted the limited occupational therapy literature on the topic of diabetes. In 31 years, only two articles about psychosocial intervention and two other articles on secondary prevention were published. Pyatak (2011) studied the ambivalence that young people entering emerging adulthood face and described their engagement in occupations of this life stage that are counterproductive to having diabetes. She found that although persistence was necessary to cope with daily challenges, many young adults may not have the diligence necessary to make healthy choices.

As a researcher and someone who has had diabetes for 39 yr, I emphasize that the deleterious effects of uncontrolled diabetes are predictable and can be delayed or avoided. Pyatak’s (2010) literature review provides a rationale for the viewpoint that psychosocial support is essential at any age, because diabetes challenges all areas of occupational performance as a result of constantly changing internal and environmental demands (Wallhagen, 1999).

Landmark diabetes studies have demonstrated that if normal glucose ranges are managed, diabetes complications may be prevented. Adherence requires restructuring daily life to take medications, monitor glucose, follow a diet, and exercise to regulate insulin levels (Diabetes Control and Complications Trial Research Group, 1993; UK Prospective Diabetes Study Group, 1998). However, only one-third to one-half of people receiving diabetes education have been found to be fully adherent to professionals’ recommendations (Hirsh, 2003); this poor adherence contributes to the current diabetes epidemic. In this article, I describe the development and evaluation of a group intervention for Mexican-American older adults to facilitate psychosocial adjustment to their condition and improve their adherence to recommendations for self-care and health maintenance.

Adjustment Issues

A person’s psychosocial well-being is particularly challenged when he or she is confronted with modifications to his or her self-care regimen. Older adults, because of their advanced age, are faced with the burden of changing longstanding habits acquired during their lifetime (Toljamo & Hentinen, 2001). This change requires motivation and gradual readiness (Koenigsberg, Bartlett, & Cramer, 2004). The need for support evolves over time, depending on alterations in health and life circumstances across the lifespan (Wallhagen, 1999). Rubin (2000, p. 21) aptly coined the term diabetes overwhelmus to explain a person’s reacting to recommended self-care changes with feelings of distress or burnout. Clients must develop a broad range of competencies that provide them with the independence needed to problem solve complex social issues, meet demands for assertiveness, and resolve timing issues related to management and redesign of daily routines. Health educators have called for research targeting multiple levels of influence: individual, family, organization, community, and policy (Jack, Liburd, Spencer, & Airhihenbuwa, 2004).

A worldwide health education study called Diabetes Attitudes Wishes and Needs surveyed 5,000 people with diabetes (Funnell, 2006). Eighty-five percent of respondents indicated that they had depression, anxiety, or stress associated with their diabetes. However, only 10% reported that they received some form of psychosocial support from health educators, and most health educators reported discomfort with discussing psychosocial issues with clients. Occupational therapists realize that values, beliefs, patterns of daily living, and psychosocial needs influence participation in meaningful occupations, occupational choices, and health (AOTA, 2010). Could occupational therapists provide the kind of psychosocial support that people with diabetes might require at any age or duration of diabetes?

Health educators have completed several studies that identify Mexican-Americans’ needs for culturally competent diabetes education and interaction with practitioners (Brown & Hanis, 1999; Vincent, Clark, Zimmer, & Sanchez, 2006). McEwen, Pasvogel, Gallegos, and Barrera (2010) had lay health workers conduct a social support intervention for Mexican-Americans. The results of the self-report questionnaires were significant, but physiological changes were not. Could occupational therapists design culturally competent group programs for people with diabetes?

My vision for this work was to create a free, community-based support program infrastructure to provide secondary prevention services for a population known to have health disparities and limited access to health care in Texas. The study question was, “Can a structured peer-led group program, with indirect supervision by an...
occupational therapy consultant, improve adherence behaviors of Mexican-American older adults?” The second question was, “Can the Bridges Diabetes Support Group Manual (BDSGM) provide a culturally sensitive structure to guide the intervention program for Mexican-American older adults?”

Method

Research Design

In this article, I report outcomes of a funded pilot study, using a one-group, pretest–posttest design with repeated measures and using participants as their own controls. Aims of this study were to evaluate the effect of a culturally sensitive, peer-led support group program to improve adherence behaviors of English-speaking Mexican-Americans with type 2 diabetes mellitus in a large community along the west Texas–Mexico border and to critique the BDSGM (Haltiwanger, 2007) used to structure the intervention. The institutional review board at the University of Texas at El Paso approved the study, and I obtained informed consent from the participants.

Participants

I selected older adults for the study because they might require help with motivation for making changes to lifelong habits. Both peer mentors (trained interveners who ran the intervention groups) and mentees (intervention group members) were participants in this study. Peer mentors were operationally defined as Mexican-Americans who had type 2 diabetes mellitus; were ≥60 yr old; read and wrote English; and followed guidelines for diet, glucose monitoring, and physical activity and thus were able to serve as good role models. Additionally, peer mentors expressed an altruistic desire to help others. Mentees were operationally defined as Mexican-Americans with type 2 diabetes mellitus who were ≥60 yr old, could read and write English, and could state that their control was not as good as others expected it to be. Spanish-only speakers were excluded.

The intent was to find peer mentors who could be good role models and be trained to lead groups of mentees who were actively seeking support. Eight peer mentors and 16 mentees began the study, making up a convenience sample drawn from a community health education center that primarily served Mexican-Americans. From names provided by health educators, I screened 70 potential peer mentors through phone conversations before finding 8 who qualified for leadership training. Later, posters were displayed at the participating facility to attract potential mentees. Research assistants identified the first 16 people who met mentee criteria by telephone and assigned them to one of two mentee groups.

Quantitative Measures

The glycosylated hemoglobin blood test (HbA1c) was selected as the standard of care because it gives the average blood sugar control in percentages that correspond to mg/dL ranges during a 2- to 3-mo period by measuring the bonding of glucose to red blood cells (Sicard & Taylor, 2005). Five diabetes self-assessment questionnaires, also available in Spanish for use in a subsequent study, were selected to measure aspects related to adherence.

Two scales developed by Lorig and other health educators at Stanford University were used. The 8-item Diabetes Self-Efficacy Scale (Stanford Patient Education Research Center, 2000) was tested with 186 participants. It was selected because of its use in three Stanford University diabetes studies, its internal consistency reliability of .828 (mean score = 6.87, standard deviation = 1.76). The Adapted Illness Intrusiveness Scale (Stanford Patient Research Education Center, 2000) was adapted from the Illness Intrusiveness Ratings Scale developed by Gerald Devins (Devins et al., 1983). It consisted of 13 items that were tested with 606 adults with chronic illness and revealed an internal consistency and a reliability of .89. Each Stanford tool was evaluated by randomized controlled trials of 2–4 yr duration and has been used in subsequent Stanford studies.

Two scales developed by Anderson, Fitzgerald, Funnell, and Gruppen (1998) and Anderson, Funnell, Fitzgerald, and Marrero (2000) have been used extensively in the health education literature. The Diabetes Attitude Scale (Anderson et al., 1998) has 33 items measuring attitude change that were tested with 1,814 patients and health practitioners. Reliability of the five subtests ranged from .65 to .80. The tool was compared with earlier, longer versions of the scale and found to have good content validity.

The second tool, the Diabetes Empowerment Scale–Short Form (Anderson et al., 2000), has 28 items tested on 229 adults with diabetes as a measure of psychosocial self-efficacy. Reliability was .84. It has three subtests that (1) evaluate management of psychosocial aspects (α = .93), (2) assess readiness to change and dissatisfaction (α = .81), and (3) measure establishment and achievement of goals (α = .91). I modified the Transtheoretical Questionnaire, a criterion-referenced tool, to assess readiness and stages of change in specific behaviors (eating, exercise, testing blood...
sugar, and recording blood sugar or urine sugar; Kim, Hwang, & Yoo, 2004).

**Intervention**

**Intervention Administration.** During Phase 1, I served as a peer role model for the intervention using the BDSGM and a train-the-trainers approach to enable peer mentors (peer interveners) to run subsequent mentee groups. Peer mentors participated in the full program for 8 wk of 1.5-hr sessions/wk. Thus, peer mentors became the first mentee group contributing to data collection. Immediately after the training period, peer mentors led two groups for mentees. Data were collected for all three groups, using participants as their own controls. All participants were tracked for 6 mo to determine whether progress could be sustained after groups ended. The two mentee groups met simultaneously during the same time and day; I stood by on the premises.

**Intervention Fidelity.** Intervention fidelity between leaders was achieved through presentation of the theoretical rationale for the program to peer mentors in the form of handouts and discussions. The structure of the manual guided the program for all participants; the last chapter in the manual described and clarified the relationships between mentors and mentees and provided procedural guidelines for group management. Monitoring of deliverables was done through review of each transcript session to ensure the peer mentors’ competence throughout the intervention process along with face-to-face supervision of the peer interveners after group sessions (Santacroce, Maccarelli, & Grey, 2004).

**Theoretical Basis for the Intervention.** The Occupational Adaptation Model (Schkade & McClung, 2001) provided concepts, guidelines, and a method for comprehending the elements of adaptation to a chronic condition, but many other models in the profession could also have been applicable. The intervention program borrowed concepts of role modeling and empowerment from Social Learning Theory (Bandura, 1977) and the Empowerment Model (Anderson & Funnell, 2002). The manual modified the format of the *Alcoholics Anonymous Big Book* (Alcoholics Anonymous, 2002), which has been duplicated by other organizations worldwide for treatment of various addictions. This group-based intervention approach for people with diabetes focused on discussion of emotional issues, relationship issues, communication skills, and behavior changes that were reinforced by the interconnections of people with a similar illness. Support was provided at informational, appraisal, tangible, and emotional levels within the group setting (Sherbourne & Stewart, 1991).

**Content of the Intervention.** The BDSGM was designed for an 8.0 reading level (corresponding to 8th grade) according to Flesch-Kincaid readability software (My Byline Media, n.d.) and was adapted for low vision in 14-point type or boldface, 16-point type (Haltiwanger, 2007). To facilitate a mentee’s adjustment to and acceptance of diabetes, key issues such as spirituality, health care beliefs, values clarification, changing habits, developing goals, stages of adaptation, and social assertiveness were explored retrospectively and later in support group discussions led by peer mentors. The manual was designed to be easily adapted and tested for other chronic diseases in the future by altering content to match a different chronic illness, culture, ethnic group, or age group.

Each BDSGM chapter uses a story method to teach concepts; introspective questions at the end of each chapter challenge readers to question their motivations and self-preservation behaviors, trial-and-error problem-solving skills, and social skills that enable them to follow the daily diabetes regimen. The intention is to get each participant to consider other viewpoints to counteract negative thinking, correct faulty information, and provide topics for meaningful shared discussion.

**Procedures**

Chapters were routinely distributed 1 wk before each corresponding session. I provided peer mentors with 0.5 hr of weekly indirect supervision after the discussion to review group content and process. Peer mentors made weekly calls to remind mentees to read and answer the questions in the next chapter before the ensuing discussion. After each discussion, research assistants collected weekly feedback sheets designed to gather input about the clarity, simplicity, comprehension, and relevance of each chapter to their needs, circumstances, and cultural viewpoints. HbA1c tests were done by a phlebotomist at the agency using finger-stick blood draw and appropriate collection procedures.

**Data Collection**

All measures of participant adherence were tested 1 wk before the intervention began and at 2-, 4-, and 6-mo postintervention. Data collection for peer mentors ended 2 mo before the mentor collection period. To control for investigator bias, research assistants started tape recorders during sessions, administered questionnaires, maintained individual records, and entered data into Microsoft Excel spreadsheets for the statistician at the university. Research assistants were trained in interview techniques for recruitment of participants and scanning of questionnaires for completeness of responses. They also spot checked the
BDSGM materials for each participant to determine whether participants were answering questions about readings consistently throughout the experience.

Data Analysis

The F test for the general linear mixed-model analysis of time factor was evaluated by a statistician for each outcome variable. Tukey’s Honestly Significant Difference post hoc procedure with significant F test identified differences, adjusted for sample size, and controlled for false positives by calculating the range of sample means that must be exceeded to achieve honest significance (Yandell, 1997). Data from feedback sheets about each chapter of the BDSGM targeted information necessary to determine the intervention program’s cultural relevance.

Results

Power analysis revealed the ideal group size to be 12. Because of space limitations, however, each room seated 8 participants plus peer mentors. Only participants who attended all sessions were included in data collection; at completion, there were 5 peer mentors and 11 mentees (4 men and 12 women). Eight people with health challenges themselves or caregiving issues withdrew (Table 1).

The HbA1c results were significant at the \( p < .05 \) level between pretest and the 4-mo posttest 2, and a stabilizing effect was found at the 6-mo posttest. Diabetes Self-Efficacy Scale responses were highly significant at \( p < .0005 \) for the pretest and the 2-, 4-, and 6-mo posttests. The change in responses on the Diabetes Attitude Scale was highly significant at \( p < .0001 \) for the pretest and the three posttests. The change in responses on the Diabetes Empowerment Scale was highly significant at \( p < .0005 \) for the pretest and the three posttest comparisons. The changes in responses on the Adapted Illness Intrusiveness Scale and the Transtheoretical Questionnaire were not significant.

Minor modifications were made to the BDSGM as result of participant feedback. Spanish dichos (proverbs) were added to each chapter of the manual to enhance the chapters’ abstract connotations in a culturally meaningful way, stimulate group discussions, and build group cohesiveness.

Discussion

This pilot study demonstrated that 5 English-speaking Mexican-American older adults could, with indirect supervision by an occupational therapist, run a structured peer-led support group program to encourage behavioral change. People who live successfully with diabetes may provide powerful messages to others. The group process and dynamics can enable people to reduce isolation and feelings of being alone in their struggle with diabetes (Pitzele, 1985). Some people with chronic illness may have a difficult time forming goals (Lubkin & Larsen, 2006) on their own, so the group format motivated goal planning. All participants concurred with the literature indicating that support from people with diabetes was beneficial and would have been welcome at any time.

Results on 3 of 5 self-report questionnaires were highly significant. The blood tests were not significant for the 2-mo posttest because the HbA1c was given at 2 mo; it may have been better to wait 3 mo to administer the test. Inclusion of one man in the study affected 2-mo posttest HbA1c statistics because he was an outlier. His HbA1c pretest was 4.2%, which was in the nondiabetic range because he ate only one meal daily. As his eating habits improved, his HbA1c percentage increased to 6.5% at the 2-mo posttest and may have skewed the results for that posttest, but the results stabilized by the 4-mo posttest.

| Table 1. Participant Demographic Characteristics \((N = 20)\) |
|---------------------------------|---------------------------------|
| **Background** | **20 First-Generation Mexican-Americans** |
| Religion | All Catholic; 6 had seen curanderos (folk healers) for treatment of susto (fright), a culture-bound precipitating cause of diabetes (Poss & Jezewski, 2002). |
| Age range | 60–85 yr |
| Duration of diabetes | 1–45 yr |
| Marital status | Duration of marriage 15–51 yr; 4 widowed, 1 single, 1 divorced |
| Highest education | Mean = 9th grade; range = 8th grade–4 yr college |
| Work status | Retired \((n = 13)\), currently working \((n = 3)\) |
| Income range | $15,000–$50,000 |
| Insurance | Medicare \((n = 10)\), Medicaid \((n = 5)\), no insurance \((n = 1)\) |
| HbA1c range | 4.2%–13.8% |
| Medication | Oral \((n = 16)\) |
| Concomitant conditions | Cerebrovascular accident \((n = 1)\), cataracts \((n = 1)\), arthritis \((n = 6)\), heart disease \((n = 4)\), peripheral neuropathy \((n = 5)\), gum disease \((n = 2)\), low vision \((n = 2)\), amputation \((n = 1)\), frozen shoulder \((n = 1)\) |

Note. HbA1c = glycosylated hemoglobin.
Most participants entered the study with some previously acquired positive habits and skills; therefore, the findings for the Adapted Illness Intrusiveness Scale were not significant, suggesting that participants did not think diabetes was an imposition and had already made some adaptation to the condition. The Transtheoretical Questionnaire findings were also nonsignificant because most participants had been functioning in the maintenance stage for ≥6 mo. These instruments may have been more sensitive to pinpoint stages of change if the study had attracted more nonadherent participants. However, people who are nonadherent may not show readiness for change and do not seek services.

All participants reported in logs or on feedback sheets that they learned to carry their blood sugar meters with them and a source of sugar in their pockets, purses, and cars at all times. They increased their blood testing activities from once per day to multiple checks per day. For example, they completed blood sugar checks before meals, 2 hr after eating (postprandial blood sugar), and before or after exercise, because they acknowledged that knowing their blood sugar level gave them instant feedback and a sense of control over their disease. The study did not provide glucose test strips. It was up to the group members to research funding resources for glucometers and test strips and for participants to initiate applications to appropriate agencies for needed supplies.

Was it necessary to develop a program exclusively for Mexican-Americans? Yes, it was, given the responses of participants, who became absorbed in the stories and teachings of the BDSGM and group interactions. The manual appeared to address cultural values and health care beliefs and offered strategies to resolve issues causing cultural dissonance. Although some participants appeared to have a fatalistic viewpoint with an external locus of control that may be common among first-generation immigrants (Purnell & Paulanka, 2008), the support group and BDSGM appeared to help members reframe the ideas derived from their health care beliefs and cultural perspectives to increase personal responsibility for making healthier choices. Limitations of favorite foods presented strong challenges to dietary adherence among group members, because cultural foods were central to all celebrations with family and friends (Purnell & Paulanka, 2008). Peer mentors encouraged mentees to find rewards other than food for reaching goals.

Implications for Occupational Therapy Practice

Certainly, occupational therapists can recognize that all clients need to be listened to, respected, and educated about their diagnosis using a client-centered approach. Occupational therapists have the unique skills to become consultants to lay leaders to manage and maintain this type of program for Mexican-Americans. When interacting with people from another culture, showing respect and personal interest and conveying a sincere effort to accommodate their cultural issues are essential.

Occupational therapists can initiate programmatic changes in their settings to incorporate all aspects of occupational performance when working with individuals, groups, or populations with diabetes. They can begin by focusing on evaluating and establishing positive health behaviors for people through reinforcement of occupation-based self-care activities in work and leisure. Occupational therapists may be able to bill for reimbursement under self-care codes (depending on state legislation); this capability could expand the realm of self-care occupations and practitioners’ psychosocial services.

Gathering research evidence about clients’ nonadherent behavior will pave the way for early recognition of adaptation problems before people become discouraged and give up on seeking healthy ways to manage their condition. As practitioners become more aware of the unique adjustment difficulties that people with diabetes experience, they can provide longitudinal evidence that shows how their interventions can reduce complications, improve emotional regulation, and lay the groundwork for reimbursement that will reduce the casualties of this global epidemic. In summary,

- This research produced significant to highly significant statistical results, as measured by reduction in average blood sugar (HbA1c) and the highly significant values on three questionnaires (Diabetes Self-Efficacy Scale, Diabetes Attitude Scale, and Diabetes Empowerment Scale).
- Results suggest that participants improved their self-perception of being prepared to handle their disease.
- Blood tests indicated that participants better controlled their glucose levels.
- Participants reflected that social support was welcome at any stage of the illness and agreed that people with diabetes can provide meaningful support to each other, given topical guidelines and rules of interaction to follow.
- Social support can be a powerful tool for motivation to change because vicarious learning occurs when one recognizes and imitates others’ success (Bandura, 1977).

Limitations

The sample size was small and limited by design, but it was sufficient to answer the research questions. Mexican-Americans
who spoke only Spanish were excluded from the study because of limited resources for translators during Year 1 funding. We hoped to attract more people who were nonadherent to the recommended diabetes regimen in our recruitment efforts, but we were unsuccessful, thereby biasing the study toward people who were doing reasonably well and were seeking help to improve. Incentives enhanced participation in the study, especially for people who faced financial barriers.

Conclusion
My research demonstrated the relationship between well-structured peer intervention and improved adherence behavior in Mexican-American older adults with diabetes. Occupational therapists have evidence to explore their role in secondary prevention. More research is necessary to document foundational evidence that occupational therapists can facilitate adaptation to a self-care management diabetes regimen enabling continued engagement in meaningful occupations. Finding individual, group, and population treatment approaches that coincide with international guidelines to promote wellness may bridge inequities, particularly where services are scant among groups with health disparities and where people are uninsured or lack resources to address this global epidemic.

Results of this study attracted more funding. The Bridges Support Group Program was expanded to generate a larger sample of participants with a mixed-method design, combining experimental study and qualitative analysis to study Spanish and English speakers during Year 2 funding (Haltiwanger & Brutus, 2011).

Acknowledgments
Occupational therapists who want to further this research can obtain the BDSGSM by contacting Emily Piven Haltiwanger.

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References


