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Camina por Salud: Walking in Mexican-American Women

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Abstract

Forty-six percent of older Mexican-American women report no leisure time physical activity (PA); 38.1% are obese. This study (1) evaluated a PA intervention on reduction of risk for coronary heart disease (CHD) and (2) determined which variables affected adherence to PA. For 36 weeks, Group I walked 3 days/week; Group II walked 5 days/week. The investigators measured total body fat, regional fat, blood lipids, and adherence to PA The walking interventions favorably affected body fat, with significant differences in body mass index (BMI) reductions[F (2, 16) = 12.86, p = .001]. No statistical differences were noted in the anthropometric and blood lipid results from baseline to the 36-week measures.

Keywords

coronary heart disease; Mexican American; walking; intervention; women

Introduction

Despite the known benefits of physical activity (PA) for reducing obesity and other cardiovascular risks, 74% of all Hispanic women report no leisure-time exercise, and older Hispanic women show marked declines in leisure-time physical activity (Crespo, Smit, Carter-Pokras, & Andersen, 2001). Among older Hispanic women, the prevalence of obesity is 47.9%, compared to non-Hispanic whites at 21.5% (Ostir, Markides, Freeman, & Goodwin, 2000). Few intervention studies designed to promote PA have been conducted among Mexican-American women (Avila & Hovell, 1994; Castro, Sallis, Hickman, Lee, & Chen, 1999; Keller & Trevino, 2001; Poston et al., 2001). For example, Avila and Hovel, using 21 Latina women and 18 controls, employed an 8 week behavior modification intervention, and a Latina “buddy” showed that the experimental group increased moderate activity over time. Poston and colleagues (2001) showed no changes in physical activity resulting from an intervention designed to increase physical activity to a minimum of 30 minutes/session for a total of 150 minutes/week. Keller and Trevino showed reductions in skinfolds and serum cholesterol resulting from a walking program in which participants walked between 85 and 88 minutes/week. Castro and colleagues (65 experimental, 63 controls) used the Stanford walking Kit and behavioral phone counseling with no significant changes in walking activity over time.

With few studies that examine the effectiveness of community-based physical activity interventions in older Mexican-American women, formative examination of culturally specific moderators to target physical activity in this group is warranted. The specific aims of this study were to (1) determine the effectiveness of two frequencies of walking on cardiovascular risk reduction (3 days/week versus 5 days/week) in sedentary, obese Mexican-American women, and (2) identify social contextual variables that serve as moderators of treatment effect on physical activity adherence among Mexican-American women.

Research Design and Methods

This study, *Camina por Salud*, was a 36-week clinical feasibility study designed to evaluate the effect of two frequencies of walking on coronary heart disease (CHD) health risks, including serum lipid levels, percentage and location of body fat, blood pressure, and adherence to physical activity. Researchers used a two-group, randomized, repeated measures design to detect change over time.

Participants and Settings

Investigators recruited and screened women, aged 45–70 years, who were Mexican-American (Hispanic), postmenopausal, obese, with body mass index (BMI) >30, sedentary, as categorized by the Physical Activity Recall (PAR), and approved for a walking intervention, as determined by the Physical Activity Readiness Questionnaire (PAR-Q). The PAR-Q is a physical activity safety questionnaire, a 7-question scale designed to elicit information regarding prior and/or existing medical conditions that would preclude the women from moderate intensity walking. Women were not invited to participate if they were physically Active, hypertensive, had medical conditions that precluded walking, or were morbidly obese.

Intervention

A *promotora*, or lay health worker, was employed in this formative study to implement the intervention. After explaining potential risks and benefits of study participation, the *promotora* obtained informed consent from prospective study participants. Then she scheduled eligible participants for fasting blood sugar tests, anthropometric measures, and lipid screening at the General Clinical Research Center (GCRC) at the Audie Murphy Veteran's Hospital in San Antonio, Texas. The study took place in the Mexican-American women's neighborhoods (*barrios*) and at a community center serving the *barrio* that houses child day care as well as meal and activity programs for older persons and that is the neighborhood center for this *barrio*. Investigators assigned each study participant to one of two treatment groups: 3 days/week or 5 days/week. Each woman walked the appropriate number of days for 30 minutes, at the pace of a 20-minute mile (3.2 Mets intensity). Participants self-reported the minutes/week that they walked and created a walking summary, using the reported activities. The *promotora* scheduled weekly times to walk at the Barrio Center, and the women joined her or walked on their own.

Group I walked for 30 minutes, 3 days/week; Group II walked 30 minutes, 5 days/week. Researchers hypothesized that the length of the treatment at low dose would favorably benefit indices of CHD risk. Data were collected at baseline (T1), at 12 weeks (T2), and at 36 weeks (T3). End-points included (1) total body fat, as measured by bioelectric impedance (BI) and BMI; (2) subcutaneous regional fat, estimated by anthropometric measures; (3) atherogenic blood lipids, measured by total serum cholesterol, HDL-C, LDL-C, and triglycerides; and (4) physical activity adherence as measured by both the PAR and time walked, according to the physical activity log.

Culturally Relevant Mechanisms

At the center, or at other selected walking locales, the *promotora* helped map out and measure a walking plan. Together, study participants and the *promotora* assessed the walking route for safety. To further maximize physical activity adherence, the Promotora mapped out additional routes, including routes surrounding the community center. Prior to beginning the training and walking, each study participant received athletic walking shoes.

This study further addressed the adherence issue by offering educational sessions monthly. The sessions taught heart-health information, including nutritional education directed towards low-fat dietary intake and low-fat food preparation methods. The study was designed to provide positive interpersonal relationships along with social time and snacks (*botanas*). Reinforcement strategies were used, such as partners (*comadres*, *gran amigas*) to help the women encourage and support each other in their walking schedule.

Study Variables

Data were collected on demographic profile, including medication use, comorbidities other than exclusionary criteria, parity, years of schooling, and community assessment for physical activity. The Physical Activity Recall (PAR) was used to assess and record PA (Sallis, Gorman, Pinski, Patterson & Nader, 1987). The PAR elicited the participant's estimated time spent sleeping and doing activities for the past 7 days and asked subjects to recall intensity and duration, from light to very hard, specific to the 7 days prior (Richardson, Ainsworth, Jacobs, & Leon, 2001). One-year validation studies showed repeatability coefficients for the total SDR of $r = .60$ ($p < 0.01$) and $r = .36$ ($p = < 0.01$; Richardson et al.). Study participants completed weekly assessments as a PA calendar.

Body weight was obtained with a balance-beam scale (− or + 0.1 kg) without shoes and in minimal clothing. Height was obtained using a wall-mounted steel tape measure and a T-square. BMI was calculated. Thigh girth was measured halfway between the inguinal crease and the patella, with the participant in a supine reclining position. Waist-hip ratios (WHR) were measured with a nonstretchable tape measure. The waist circumference was measured at the narrowest spot between the ribs and hips. Hip circumference was measured at the widest circumference. Body fat was assessed with the portable four-terminal bioelectrical impedance (BI) measurement system. The Valhalla 1990B delivers a low-level electrical signal of 500 microamps at 50 kHz. Instrument calibration was performed internally prior to each estimate of body composition. The manufacturer's reported accuracy is 0.25% +/− 1 Ohms; the detecting current ranges from 0 to 1023 Ohms. Measurement of body composition using BI analysis followed the method outlined by Tanaka and colleagues. Venous blood was analyzed for blood lipids, including measurements for total cholesterol, HDL-C, LDL-C, and triglycerides.

Social Contextual Moderators

The Community Assessment for Exercise Survey was used to assess places in which people exercise in neighborhoods and communities with regard to availability, distance, and perceived safety. Investigators assessed social support for exercise by using the Friend Support for Exercise Scale and the Family Support for Exercise Scale (Sallis, Grossman, Pinski, Patterson, & Nader, 1987). Test-retest reliabilities range from 0.55 to 0.86 (Sallis et al.). Alpha coefficients range from 0.61 to 0.91 for internal consistency (Sallis et al.).

Acculturation was assessed with the Hazuda Acculturation and Assimilation Scale (Hazuda, Haffner, Stern, & Eifler, 1988).This scale asks participants about childhood and adult language use, value placed on preserving Mexican cultural traditions, family structure, sex role organization, and childhood and adult interactions with mainstream society (Hazuda et al.).

The score represents the influence of the Mexican-American culture, with lower stratum 0.96. Correlations with other types of assimilation and socioeconomic status range from 0.11 ($p < .05$) to .73 ($p < .001$) (Hazuda et al.).

Data analysis

Initial analysis consisted of descriptive statistics for all variables within each group, comprising counts and percentages for categorical variables, means, and standard deviations. A mixed models analysis was computed to determine individual changes over time.

Findings

Eighteen women were enrolled, 11 in Group I, the 3-day group (4 remained at study end), and 7 in Group II, 5-day group (4 completing the 36-week study). The mean age of the women in the 3-day group was 56.5 (SD 6.4), and in the 5-day group, it was 53.5 (SD 5.8). The number of minutes walked per week for the 3-day group was 63.72 (SD 44.67), and for the 5-day group, 129.15 (SD 65.55). The goal was for participants to walk 90 and 150 minute/week respectively. At 12 weeks, the drop-out rate was 28%; at 36 weeks, it grew to 52%.

The mixed models analysis showed significant main effect differences in the groups in BMI over time [$F (2, 16) = 12.86$, $p = .001$], with BMI decreasing over time. This change over time differed by group, 3 days vs. 5 days/week walking [$F (2, 16) = 4.49$, $p < .003$], primarily in the 3-day/week walk group between all time points (T1-T2, [$F (2, 16 = 5.22$, $p < 0.03$]; T1-T3 [$F (2, 16) = 20.97$, $p < 0.001$], T2-T3 [$F (2, 16) = 9.34$, $p < .005$]. Differences were shown only between T1 and T2 in the 5-day/week walk group [$F (2, 16) = 12.09$, $p < 0.003$]. T1-T3 and T2-T3 in the 5-day/week walk group were not significantly different. As one would expect, the other body fat parameters, such as BIA [$F (2, 16) = 4.27$, $p < 0. 05$] and weight [$F (2, 160= 17.24$, $p < 0.001$), showed the same pattern of between-group differences at T3. Over time (36 weeks), changes in serum cholesterol levels were not significant. The LDL-C fell in the 5-day group but not in the 3-day group. The triglycerides fell in the 3-day group and rose in the 5-day group. Table 1 and Table 2 presents the study findings on the measures.

For this sample, the Hazuda Scale showed strong assimilation, such as high proficiency in the English language with a high value and preference to Mexican cultural values and Spanish-language preference. The neighborhood characteristics scale indicated that the women found their walking neighborhoods to be safe. There were no significant relationships between the minutes walked each week and the psychosocial parameters of acculturation and neighborhood characteristics. In contrast, for the 3-day group, there was a strong correlation between minutes walked and the social support scores ($r = 0.99$; $p = 0.04$) (table 3).

Discussion

While both walking groups did not meet the expectations of minutes per week walked, there were clear improvements in the measures of body fatness and weight in both groups and trends toward favorable lipid profiles. In this group of older Mexican-American women, clear beneficial effects on body weight were achieved just by becoming active. The primary factor that stimulated the Mexican-American women to initiate and sustain their walking was development of a *gran amiga* or special friend. These women became *comadres*; they provided each other with consistent encouragement to care for oneself and to promote better health through a planned walking program. While these strategies were instrumental in keeping the women walking, as evidenced by the accumulation of walked minutes, the strategies were not successful in sustaining participation over the lengthy study.

The level of acculturation in this group of Mexican-American women was low and was unrelated to the walking minutes achieved by the women in the sample. Strategies that investigators considered to be culturally specific, those that they identified in focus groups that were convened before the study and implemented in the study, did keep the women walking who stayed in the study but did not affect dropping out of the study. Further research needs to focus on encouraging women to set aside time daily or every other day for formal walking and on examining strategies such as encouragement of shorter, more frequent, bouts of walking.

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Table 1

Blood Lipid Levels in Groups I and II

Group	Cholesterol		HDL-C		LDL-C		Triglycerides	
Group I: 3 day	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
T1	185.09	26.13	48.09	12.73	108.86	19.02	148.09	99.01
T2	192.25	25.94	46.75	14.80	115.15	28.41	151.87	42.21
T3	201.66	23.62	55.33	15.31	118.96	23.65	136.33	32.47
Group II: 5 day								
T1	188.71	39.21	49.00	5.88	109.25	37.44	152.28	83.95
T2	181.33	29.92	50.83	7.94	107.46	31.41	115.16	56.13
T3	189.66	26.57	57.33	18.88	98.23	35.57	170.66	112.09

Table 2

Anthropometric Measures in Groups I and II

Group	Weight		WHR		BMI		BIA	
Group I: 3 day	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
T1	200.08	40.65	.86	.07	36.53	7.94	46.49	3.65
T2	187.80	24.38	.85	.58	34.44	3.56	43.77	1.31
T3	164.66	14.80	.84	.09	30.39	1.29	42.50	1.91
Group II: 5 day								
T1	180.06	27.60	.82	.07	32.44	3.66	41.99	5.93
T2	185.10	21.54	.83	.06	33.53	4.67	42.21	3.16
T3	158.06	20.14	.81	.03	29.93	1.37	39.30	5.44

Table 3

Social Support Scores for Groups I and II

Group	Group I: 3 day				Group II: 5 Day			
	T1		T3		T1		T3	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Family	53.9	9.2	42.6	17.9	40.8	16.5	31.0	5.6
Friends	51.0	14.3	42.3	18.5	40.6	15.5	37.0	8.48