Associations of Partner Support and Acculturation With Physical Activity in Mexican American Women

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Abstract

Introduction: Insufficient physical activity (PA) and obesity-related health conditions have reached epidemic proportions worldwide. Mexican American women (MAW) report low leisure time physical activity. Few studies examine activities beyond leisure time. Qualitative research suggests that partner support influence provides a cultural approach relevant to PA among MAW. **Method:** This cross-sectional study used an ecological model to investigate community (the physical environment), interpersonal (partner support, attitudinal familism), and intrapersonal (age, health conditions, acculturation, employment, and body mass index) factors associated with PA among 112 MAW. Community-based participatory research recommendations guided the preparatory phase of the study and the face-to-face interviews. Frequencies and descriptive statistics were computed. Multivariable linear regression analyses were used to examine associations between study variables. **Results:** Moderate to high PA levels were found based on combined activities performed during leisure time, transportation, household tasks, and occupational duties. Women with greater partner support reported higher PA levels. Although acculturation levels were low among women, those with higher acculturation were found to be more physically active. **Conclusions:** Future studies should examine strategies to increase partner support and address acculturation within intervention programs to enhance overall PA among MAW.

Keywords

acculturation, Mexican, partner support, physical activity, women

Introduction

Insufficient physical activity (PA) and its impact on cardiovascular disease, diabetes, and cancer is an epidemic in the United States (American Heart Association [AHA], 2019a) and worldwide (World Health Organization, 2018). An overarching goal for the Healthy People 2030 initiative is to promote healthy behaviors to decrease risks for cardiovascular disease and other major causes of mortality (Office of Disease Prevention and Health Promotion [ODPHP], 2019a). The threshold of PA recommended to enhance cardiovascular health is 150 minutes of moderate or 75 minutes of vigorous aerobic activity per week (AHA, 2019a). Although PA objectives targeted for Healthy People 2020 were exceeded among adults ≥18 years from 2008 to 2017 (ODPHP, 2019b), high overweight and obesity rates were found among Mexican American women (MAW; 77%) compared with their non-Hispanic White counterparts (64%; ODPHP, 2017). Adult Mexican Americans (MA) belong to the largest subgroup of Hispanic/Latino populations in the United States (62%; Office of Minority Health, 2019) and are projected to increase to 129 million by 2060 (U.S. Census Bureau, 2016). Hispanic/Latino populations represent individuals who

are descendants from Mexico, Cuba, Puerto Rico, or other Spanish origin countries in Central and South America (Office of Minority Health, 2019). However, in this study the terms "Hispanic" and "Latino" are used interchangeable to focus on women of Mexican descent. MAW have higher rates of obesity (51%) and hypertension (24%) than men (44% and 22%, respectively; Centers for Disease Control and Prevention, 2017). Obesity, hypertension, diabetes, smoking, high blood cholesterol, and inadequate physical activity are major modifiable risk factors for cardiovascular disease (AHA, 2019b) that are significantly reduced by walking (AHA, 2019c). While walking is the most common form of activity performed by MA, non-Hispanic Whites and non-Hispanic Blacks, women

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in the United States reported walking less on average (152 minutes/week) than men (198 minutes/week; Dai et al., 2015). Among MAW, this fact may be explained by their relatively lower levels of reported leisure time physical activity (LTPA; 18 minutes/day) as compared with MA men (30 minutes/day Arredondo et al., 2016).

LTPA includes activities such as swimming, gardening, hiking, dancing, and walking performed during leisure time (World Health Organization, 2019). Walking and dancing are leisure time activities that are culturally appropriate for MAW (Parra-Medina & Hilfinger Messias, 2011). Living in walkable communities with easy access to walking facilitates engagement in LTPA by Latino men and women (Silfee, Rosal, Sreedhara, Lora, & Lemon, 2016). Earlier research demonstrates that low acculturation and lack of neighborhood safety present barriers to engagement in LTPA that can be mitigated by social support (Harrolle, Floyd, Casper, Kelley, & Bruton, 2013). More recent evidence involving Hispanic women suggests that the impact of the neighborhood environment may be attenuated by lack of social support for walking received from family, friends, or neighbors (Salinas, McDaniel, & Parra-Medina, 2018).

ResearchGate, the Cochrane Library, SAGE Publications, PubMed, and Google Scholar were included in an integrative process to search "partner support," "physical activity," "acculturation," and "Mexican American women." Furthermore, relevant keywords and truncation were utilized to capture variations of the terms examining physical activity in Latino women. Several studies indicate that social support received from family (Kohlbry & Nies, 2010; Pekmezi, Marquez, & Marcus-Blank, 2010; Skowron, Stodolska, & Shinew, 2008), friends (Larsen, Pekmezi, Marquez, Benitez, & Marcus, 2013; Marquez & McAuley, 2006), and promotoras (community health workers; Vincent, 2009) enhances LTPA by Latino women. Promotoras are trusted community members who provide cultural service in various roles as outreach worker, translator, educator, advocate, and mentor (Rural Health Information Hub, 2019). A recent randomized clinical trial involving MAW reported a significant increase in LTPA during the intervention consisting of exercise classes and walking groups led by promotoras (Salinas & Parra-Medina, 2019). Moreover, a review of intervention studies concluded that family support involving spouses is positively associated with long-term PA (Pekmezi et al., 2010). However, there is limited information about concurrent influences of partner support and acculturation on MAW PA levels. The complex nature of PA encompassing environmental and social support factors (Sallis & Owen, 2002) suggests that a multifaceted approach is needed for investigating PA levels.

Conceptual Framework

Bronfenbrenner's multidimensional social–ecological model considers factors influencing health behaviors at environmental (mesosystem), social (microsystem), and individual levels (Bronfenbrenner, 1977, 1994). The model has been adapted in a review of barriers to PA within four levels: intrapersonal, interpersonal, community/institution, and macro/public levels (Fitzgerald & Spaccarotella, 2009). Past research supports the value of incorporating aspects of Bronfenbrenner's multilevel approach in examining lifestyle behavioral changes in relation to health (Fitzgerald & Spaccarotella, 2009; Kiraly, Turk, Kalarchian, & Shaffer, 2017; Marquez & McAuley, 2006; McLeroy, Bibeau, Steckler, & Glanz, 1988). Furthermore, a broad ecological framework is applicable in evaluating interventions integrating strategies to improve diet and PA among overweight and obese Hispanics (Kiraly et al., 2017). In this cross-sectional study involving MAW, a multifaceted ecological model is used to examine community (the physical environment), interpersonal (partner support, attitudinal familism), and intrapersonal (age, body mass index [BMI], chronic health conditions, acculturation, and employment status) influences on PA. We hypothesized that women with more partner support would have greater PA, and those with lower acculturation levels would engage in less PA.

Method

Design

The study followed community-based participatory research recommendations and was guided by a community advisory board (CAB) consisting of six bilingual/bicultural women of Mexican descent. The CAB reviewed focus group results and provided feedback during the preparatory phase of the research.

Recruitment

Data were collected at multiple sites in Southern California: an income-based community clinic, two churches, and several outreach programs providing clothing, food, and health screening to community members. Community leaders/directors of programs provided support letters to allow recruitment and interviewing of participants at their sites. Spanish and English flyers were posted at public venues giving information about eligibility criteria for participation in the study. Announcements were made during church services and community events to advertise the study. Two specially trained, bicultural research assistants (RAs) used a display table at study locations to recruit participants. The RAs performed recruitment activities, screening, and obtained informed consent before conducting face-to-face interviews to verbally administer the questionnaires. The study protocol was approved by the International Review Board at University of California Los Angeles, Office of the Human Research Protection Program (International Review Board Approval No. 14-000477).

Setting and Sample

A total of 112 women (78% of those recruited) were found eligible and participated. Participants were compensated with $10 Target gift cards for time spent interviewing. Study participants were 19 to 64 years old, self-identified MAW who were

married or single and living with a partner. More than half (74%) of the women were primarily Spanish speaking, while 26% were either English speaking or bilingual.

Measures

Before quantitative data collection began, the RAs conducted focus groups to pilot test two instruments: the abbreviated Neighborhood Environment Walkability Scale (NEWS-A; Cerin, Saelens, Sallis, & Frank, 2006; see Appendix A, available online) and an adapted version of the Social Support and Exercise Survey (SSES; Sallis, Grossman, Pinski, Patterson, & Nader, 1987; see Appendix B, available online). These measures were used to assess the perceived physical environment and support for PA received from family and friends, respectively. Following an ecological approach, measures of the study were categorized into community, interpersonal, and intrapersonal levels.

Community level. Influences at the community level were examined using the NEWS-A. The NEWS-A measures the physical environment through an assessment of neighborhood characteristics (e.g., street connectivity and traffic safety; Cerin, Conway, Saelens, Frank, & Sallis, 2009). Based on previous research recommendations for instrument development with Spanish-speaking individuals, efforts were made during the preparatory phase of this study to increase the readability of the NEWS-A by targeting cultural and linguistic equivalency below the 12th-grade level. Simpler words were provided in parentheses next to difficult concepts to clarify meaning.

Interpersonal level. Influences at the interpersonal level were assessed by an adapted version of the Social Support for Exercise Survey (ASSES). In the original 13-item SSES, respondents were asked to rate each item on family and friends using a categorical response scale. The ASSES differed from the original SSES in that "partner" was added to the SSES to measure partner support separately from family support. However, only partner support was included in the current analysis. Support for PA included actual participation and offering to exercise with the respondent, use of verbal reminders, encouragement, facilitation, discussion, complaints, criticisms, rewards, and planning activities around exercise. The reliability estimates for the original SSES utilized among Latino adults ranged from 0.91 to 0.93 (Marquez & McAuley, 2006). In this study, we also found a reliability (Cronbach's α) coefficient of .93 for the ASSES. Both questionnaires (NEWS-A, ASSES) were translated and back-translated by a bicultural certified translator. The questions were then checked by the CAB for any inconsistencies and reviewed for clarity and readability to ensure there were no difficult or ambiguous words.

Studies involving Latino women have used the Attitudinal Familism Scale (AFS; Steidel & Contreras, 2003). The AFS identifies important themes among Latino populations including placing family needs above self, support of family members by living together in close proximity, mutual support of family

members facing difficulties, protection, and honor of the family name (Steidel & Contreras, 2003). Reliability (Cronbach's α) coefficient for the AFS in a study involving MAW (Austin, Smith, Gianini, & Campos-Melady, 2013) was the same as the current study (0.80).

Intrapersonal level. The Short International Physical Activity Questionnaire was used to measure self-reported PA. Scores for self-reported PA on the Short International Physical Activity Questionnaire were calculated based on metabolic equivalents per week (MET-mins/week). Test–retest reliability was 0.80 within 1-week intervals in 12 countries (Craig et al., 2003). Cronbach's α was .70 in this study.

Actual and self-reported PA. To determine the relationship between actual PA and self-reported PA, a random subsample of 20 women were recruited from the total sample ($n = 112$) and requested to wear Yamax Digiwalker CW-701 pedometers. The Yamax Digiwalker CW-701 pedometer is reported to have a reliability of .90 in conditions of walking fast on a treadmill, on an indoor track and in free-living conditions (Coffman, Reeve, Butler, Keeling, & Talbot, 2016). Of those selected, 16 women agreed to wear pedometers all day for a week and return for a second interview. Physical activity logs were maintained by women during the period of pedometer use. Among pedometer wearers, data gathered from three women were excluded from the analysis because of an extremely low number of steps (i.e., <50 steps) and for wearing the pedometer less than 2 days, leading to a final sample of 13 women.

For all women in the study, we assessed age, chronic health conditions, acculturation, employment status, and BMI. Age, number of reported chronic health conditions (heart attack, heart failure), and employment status (not employed, full-time, and part-time) were obtained through self-reports. The General Acculturation Index (GAI) has been used to measure acculturation in studies involving Latino women (Balcázar, Castro, & Krull, 1995). Acculturation was operationalized by the GAI based on language, country of origin current friends, and/or ethnic pride of participants (Balcázar, Krull, & Peterson, 2001). Coefficient α of .83 for the GAI was originally reported (Balcázar et al., 2001); α was .70 in the current study. The final data collection procedure was height and weight assessment using a basic portable height measuring stick and Seca scale, respectively (Brener, McManus, Galuska, Lowry, & Wechsler, 2003). BMI was determined based on height and weight using the AHA BMI calculator.

Analysis Plan

Analyses were performed using the Statistical Package for Social Sciences, version 22. Frequencies and descriptive statistics were computed to summarize the characteristics of the women in the study. Relationships between variables were considered in two phases. First, Pearson product–moment correlations were calculated to assess unconditional (bivariate) relationships of PA with each of the eight variables

representing intrapersonal, interpersonal, and community domains. Then multivariable linear regression was used to explore relationships with PA: first (Model 1), variables within the intrapersonal domain (allowing focus on acculturation, controlling for age, BMI, number of chronic health conditions, and employment status); then (Model 2) adding variables representing the interpersonal and community domains (allowing focus primarily on partner support, controlling for the other variables). For each of these regressions, the modeling process first included all specified predictors (five in Model 1; eight in Model 2), then estimated a more parsimonious model sequentially dropping variables with $p > .85$ (BMI in Model 1; BMI and physical environment in Model 2, without loss of explained variance). Only the final versions of the models are presented here. The sample size of 102 provided 0.80 power ($\alpha = .05$) to detect a small effect size ($f^2 = 0.08$).

Results

Among the 112 women in our sample, age ranged between 19 and 64 years ($M = 39$, $SD = 11$; see Table 1 in Appendix C, available online). Approximately half of the women were obese (52%) with high BMI values ($M = 31.97$, $SD = 7.12$) and more than half (59%) reported having chronic health conditions. The most commonly reported chronic health conditions were hypertension (22%), depression (21%), and diabetes (17%). Acculturation levels of women were low ($M = 1.8$, $SD = 0.78$), consistent with the fact that the majority spoke and read in Spanish. This finding was also supported by the large percentage (74%) of women who chose to complete the interview in Spanish. Besides the predominance of Spanish speakers, the low acculturation of women also reflected pride in their ethnicity, identification of Mexico as their country of origin, and having friends of Mexican descent or similar ethnicity.

Attitudinal familism ranged widely from 4.83 to 10 ($M = 7.98$, $SD = 1.15$). Women were mostly (63%) unemployed. Unexpectedly, the majority of women (78%) reported moderate to high levels of PA. Among pedometer wearers ($n = 13$), those who reported higher PA also had higher pedometer scores, but the correlation was not statistically significant ($r = .46$, $p = .106$).

Perceived partner support for PA varied (range = 1.00 to 4.85, $M = 2.73$, $SD = 0.94$). Women with greater partner support also reported higher levels of PA than those with lower levels of partner support. For example, women with high activity levels reported that their partners provided support by exercising with them, encouraging them to exercise or creating circumstances to make it easier for them to exercise. A positive and statistically significant correlation was found between partner support and PA ($r = .29$, $p = .001$). This significant relationship ($p = .008$) was maintained in a multivariable linear regression when controlling for age, number of chronic health conditions, employment status, and attitudinal familism (see Model 2 in Table 2 of Appendix D, available online). However,

PA was not significantly related to the physical environment or attitudinal familism.

Women with higher levels of acculturation also reported higher PA levels ($r = .30$, $p = .049$) than less acculturated women. In a multivariable linear regression analysis, nonsignificant associations were found between PA and several predictor variables including age, number of chronic health conditions, and employment status (see Appendix D, available online). Acculturation was significantly associated with PA ($p = .049$) in Model 1 (intrapersonal variables only), controlling for age, chronic health conditions, and employment status; acculturation maintained a significant relationship ($p = .023$) in Model 2 when partner support and attitudinal familism were also controlled.

Discussion

Our findings demonstrate that MAW engage in moderate to high PA levels based on a broader conceptualization of their behavior that combines activities performed during leisure time and for transportation, household, and occupational responsibilities. Other studies support the inclusion of activities in these areas because of the strong influence of these domains on PA among women with lower income and educational levels (Ham, Yore, Kruger, Heath, & Moeti, 2007). Both partner support and higher acculturation positively influenced women's PA levels. Levels of PA measured through self-reports ($n = 112$) were congruent with pedometer readings ($n = 13$). This finding is consistent with an earlier study involving accelerometer readings (Koniak-Griffin, Brecht, Takayanagi, Villegas, & Melendrez, 2014). Importantly, focus on overall PA provides a comprehensive view that includes performance of various types of activities.

Recent studies involving men and women of Mexican and Central American origin have shown high levels of PA in their occupational roles (Arredondo et al., 2016) suggesting that activities performed during work should be included in PA measurement. Dancing and walking are preferred forms of PA that are culturally pertinent to MAW (Parra-Medina & Hilfinger Messias, 2011) and when included can help capture overall PA. Although high levels of PA are reported during work hours by Latinas (Arredondo et al., 2016), no current study was found that investigated the benefits of PA for them. However, different types of PA may have varied effects on health outcomes. For example, LTPA has been shown to provide improved mental health benefits by reducing depression and anxiety (Jaehyun, 2018). Physical fitness identified as muscular strength and endurance in cardiorespiratory functions has been reported to improve health-related quality of life in overweight and obese children in Spain (Perez-Sousa, Olivares, Escobar-Alvarez, Parraca, & Gusi, 2018). In contrast, occupational PA was shown to have detrimental effects (elevated heart rate and increased inflammation) on cardiovascular health (Holtermann, Krausse, van der Beek, & Straker, 2018). This suggests that while measurement of overall PA performed in all

domains is essential, relevance of each domain to health outcomes should also be considered.

Differences in results across studies examining social support received from family and friends may be related to types of PA measured and expectations of support existing in relationships. For example, studies focusing on exercise, sports, play, and dance found that women received greater support from friends than their family (Skowron et al., 2008). Participation in activities that involve social interaction (e.g., sports, play, and dance) may occur because women are more likely to be supported by friends than family if they have friends who are interested in similar activities that they are involved in.

The critical role of family support in motivating women to perform activities at home, work, and during exercise (Mier, Medina, & Ory, 2007) is in alignment with partner support necessary for women to maintain their role in the family. Partners of women who are married and/or living together in the same household can potentially play a more influential role in PA involvement than distant family or friends. This study explored support for PA that women received from partners by asking them about reminders and rewards received, discussions, schedule arrangements, actual participation, or lack thereof through complaints and criticisms toward them for being physically active. Examining both support and barriers to PA is essential in determining the specific influence of partner support (Soto, Shakya, Haughton, & Arredondo, 2018).

Categorizing partner support as a separate entity in the current study made it possible to distinguish its specific influence. Focus on partner support is relevant based on results from a randomized controlled trial showing high PA levels among women who received text messages from partners (Berli, Stadler, Shrout, Bolger, & Scholz, 2017). Similarly, an intervention study showed that women reported increased PA after their partners encouraged them to be physically active (Rezaee, & Mazaheri, 2017).

A recent national survey measuring acculturation by spoken language alone has found that Latino adults with higher acculturation also reported increased vigorous LTPA (López & Yamashita, 2018). Several large national studies focused on various PA domains in relation to acculturation conceptualized in a variety of ways (i.e., birthplace, age of immigration, number of years living in the United States, and preferred language); results of these studies also showed that acculturation and LTPA levels increased proportionally among Latino populations (Ham et al., 2007).

Application of a broad ecological framework targeting multilevel community, interpersonal, and intrapersonal factors in this study has shown unique associations of partner support and acculturation with PA among MAW. Nonsignificant findings pertaining to PA in relation to the physical environment and attitudinal familism require further consideration. Despite our pilot testing to simplify the NEWS-A, it had a Flesch–Kincaid estimated 12th-grade reading level, so women in the study may have had difficulty answering these questions. However, significant relationships found between PA and subscales of the NEWS-A including residential density (e.g., single-family houses, apartment, etc.) and crime in the neighborhood suggest that future studies should target these areas.

Lack of significance found between PA and attitudinal familism may be related to the limited use of the AFS found among MAW (Austin et al., 2013). Previous research showing correlation between familism and PA behaviors among Hispanic/MAW have examined familism differently based on advice and support received from the family and obligations toward them (Perez & Cruess, 2011). Use of the AFS is appropriate based on validation of the measure against the widely used Acculturation Rating Scale for Mexican Americans–II (Steidel & Contreras, 2003).

Limitations of the study include the use of self-reports, cross-sectional data, and the small number of women wearing pedometers in the subsample. Participants were recruited from one geographic area that may not be representative of the larger population of MAW. Although causal inferences cannot be drawn, the sociocultural influences (partner support and acculturation) on PA levels provide insights that may be useful for larger studies and future intervention programs.

Conclusion

Partner support had a significant positive relationship with PA levels of women in this study. Understanding the unique influence of partner support provides insights that can be beneficial in supporting lifestyle behavioral changes among MAW. Regardless of individual characteristics, PA can be influenced by the interplay of partner support and acculturation of women. Hence, partner support and acculturation are important factors that should be incorporated to help strengthen intervention programs implemented to increase PA among MAW. Although overall PA should be measured, the effects of PA performed in each domain may be important to consider in promoting increased PA. Future studies should also examine facilitators of and barriers to partner support and acculturation of MAW in investigating their overall PA. Further research is needed to determine if strategies geared toward formulating reminders, facilitating discussions, and schedules help strengthen support for PA in partner relationships.

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Supplemental Material

Supplemental material for this article is available online.

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