



Published in final edited form as:

Prog Community Health Partnersh. 2013 ; 7(2): 191–199. doi:10.1353/cpr.2013.0014.

Fall Risk and Prevention Strategies in an Elderly Latino Population: A Global Health Partnership in a Local Community

Erin R. Hanlin, BS¹, Angélica Delgado-Rendón, MS², E. Brooke Lerner, PhD^{1,3}, Stephen Hargarten, MD, MPH^{1,3}, and René Farías, BA²

¹Injury Research Center, Medical College of Wisconsin, Milwaukee, WI

²United Community Center, Milwaukee, WI

³Department of Emergency Medicine, Medical College of Wisconsin, Milwaukee, WI

Abstract

Background—The impact of falls in the elderly presents a significant public health burden throughout the country. Fall risk is not well described in Latino populations nor have fall prevention programs considered the needs of this population.

Objectives—The objectives of this study were to define the impact of falls in elderly Latinos at the United Community Center (UCC), to determine any possible barriers and recognize possible strengths in this elderly population with regards to fall prevention, to determine the level of interest within this population in various fall prevention methods and to provide medical students from the Medical College of Wisconsin (MCW) an opportunity for participation in a culturally-diverse community project.

Methods—A prospective survey was conducted by a medical student with a convenience sample of elderly program participants at the UCC. The fall-related survey was developed in collaboration with the community and academic partners in both English and Spanish and pilot tested with UCC staff members who were embedded in the community and were native Spanish speakers. Community center participants were approached by the interviewer during various UCC program activities and asked to participate. Those who agreed were read the survey questions by the medical student interviewer in their preferred language and their answers were recorded. Data was analyzed using descriptive statistics.

Results—103 interviews were conducted. 54% of respondents had fallen in the last year, of those 21% required medical care, 81% were afraid of falling again, and 66% considered themselves at risk for falling again. 52% of all respondents had five or more of the 10 surveyed risk factors for falling, and only 4% had no risk factors. 75% of all respondents were afraid of falling. Talking with health care providers and participating in an exercise class were the preferred methods of health information delivery (preferred by 78% and 65%, respectively).

Conclusion—Elderly Hispanics in this specific population frequently fall and are worried about falling. Risk factors for falling are also prevalent. A fall prevention program is likely warranted and should include exercise classes, information sessions and a connection with local primary care providers. A partnership between MCW and the UCC is an ideal collaboration for the future development of this program.

Fall-related injuries in the elderly are a significant public health burden through out the United States.¹ In 2007 approximately 3,800 of every 100,000 Milwaukee County residents over the age of 65 presented to area emergency departments with injuries from unintentional falls and more than 2600 out of 100,000 were hospitalized.^{2,3} The burden of falls in an elderly population goes beyond physical injury because it can lead to a fear of falling that can severely diminish quality of life.^{4,5,6,7}

The significance of falls in elderly Caucasian communities is well documented, and initial studies exploring fall prevalence, severity and risk factors in international and multi-cultural communities in the United States are finding that falls are a burden in these communities as well,^{8,9,10,11} However, although a wide variety of community-based public health programs addressing falls and the fear of falling have been implemented with variable success, these programs are often focused on English speakers and are not effectively translated and delivered to culturally diverse communities.^{6,7,12,13} This paper reports on an initial needs assessment project related to the impact of falls, the presence of fall risk factors and the implication for future prevention strategies conducted by a unique community-academic partnership involving medical students within an underserved elderly Latino population.

ACADEMIC-COMMUNITY PARTNERSHIP

The community and academic partners on this project have a strong, long-standing partnership developed through equal collaboration and interactive learning and include professionals from a large Latino community center and health researchers from a private medical school. The community partners represented the United Community Center (UCC), a multi-disciplinary community-based organization serving the Latino population in Milwaukee County. The UCC serves a total of 432 Latino seniors, representing all 37 zip codes within Milwaukee County, through their Senior Center, their Latino Geriatrics Day Center for seniors with dementia, and their Un Nuevo Amanecer depression program for seniors.¹⁴ The UCC is also a Milwaukee County contracted site for Family Care, a program which operates the Family Care Managed Care Organization through a contract with the Wisconsin Department of Health Services. Through the Family Care program, the UCC serves frail Latino seniors who require long-term care and their families. In addition, the UCC has a long history of conducting community-based participatory research (CBPR) within a federally recognized medically underserved community. The majority of the health programs delivered at the UCC are based on CBPR and its principals of community engagement and equal collaboration.

The academic partners from the Medical College of Wisconsin (MCW), a private free-standing medical and graduate school serving the greater metropolitan area of Milwaukee, are part of a unique research center that employs experts within the field of injury research and prevention. The Injury Research Center (IRC) at MCW serves the Great Lakes area by conducting both local and wide-spread injury research and aiding in the development of prevention initiatives. The partnership also included a medical student in the first three years of medical school training, providing an educational opportunity in a CBPR service learning project.

Partners worked together on all aspects of this needs assessment project, including (1) idea initiation, (2) project development, (3) funding acquisition, (4) project implementation, (5) results reporting, and (6) student education. The community partner first recognized the need for a fall-related needs assessment in order to address this perceived health problem within their elder population. The academic partner recognized its need to enhance medical student education within the area of multi-cultural CBPR and partnered a medical student with the UCC in order to address the specific needs of the community partner. Community and academic partners then worked together for almost three years, first acquiring funding for the student research project then developing, implementing and reporting on the falls-related needs assessment. This project is being used as the basis for future fall prevention program development focusing on this specific elderly Latino population, and this partnership has continued and expanded to include more medical student learners.

Partnership Goals

In 2008, through a partnership between the UCC, the Milwaukee Food & Fitness Coalition and MCW, a survey was conducted with 60 UCC Senior Center participants and found that 51% of the seniors reported that they had fallen in the past year, 27% had sustained injuries from the fall that required a visit to a doctor's office or emergency department, and that for 27% the fear of falling prevented them from doing regular activities.¹⁵ Based on this preliminary data, the UCC hypothesized that falls were a significant health burden among their seniors and that recognized fall risk factors were prevalent in this population; therefore, they developed a long-term plan to first identify risk factors and assets in the community and then to develop and implement a fall prevention program in their elderly population.

In 2009 an MCW student interested in global health who was participating in the IRC's student injury research program approached the UCC offering to fulfill any need they had within the area of injury research. From this initial meeting, the UCC formed a partnership with faculty at MCW centered on the medical student researcher and focusing on falls in the UCC's elder population. We report on the preliminary work accomplished by this partnership.

A research study was conducted at the UCC by the MCW medical student, serving as the first phase in the UCC's long-term fall prevention plan. The goal of this initial project was to conduct a needs assessment survey in order to better understand the attitudes, interests and specific needs of UCC's elderly community relating to falls. It is the UCC's long-term goal to use the data gathered in this initial study to inform the development of a linguistic and cultural translation of an evidence-based fall prevention program.

This project also served as a model for the development of an academic-community partnership between the UCC and MCW within in the context of the medical school curriculum, as well as a model for global health education within the local community. This partnership placed a medical student participating in both MCW's global health program and in the IRC's injury research program at the UCC under the direction of a UCC community mentor and two MCW faculty mentors. Because medical educators now recognize the importance of creating culturally competent, service-oriented physicians¹⁶, all MCW students now pursue community-based research or service learning projects during

their medical degree program. Additionally, MCW's rapidly expanding global health program is in need of local and global partnerships to offer research and service opportunities for students. Therefore, this was an important first step toward the development of a partnership that would offer opportunities for student involvement in culturally diverse CBPR projects.

In the spirit of CBPR, this project combined community partner needs with the student's educational goals through a research project in an ethnically diverse setting. The student constructed a community-based research project, was challenged to conduct research in a culturally diverse setting and had the opportunity to translate research results into a community-based program. Additional educational goals included immersion in the Latino culture, speaking and writing Spanish and developing the complex interpersonal and professional skills needed to be a community-centered physician. All these educational goals were met in the context of the overarching needs of the community including the need to determine the incidence and impact of falls in their elderly population, the need to understand the interests and concerns of this population and eventually the need for a sustainable and effective fall prevention program for their elderly. A community-academic partnership between MCW and the UCC has proven to be an ideal medium to address falls in this specific elderly Latino population while meeting specific educational goals for medical students.

Project Objectives

The primary objectives of this needs assessment CBPR project were to address the needs of the community partner with regards to fall risk and prevention strategies for their elder population while fulfilling the academic partner's need to offer a unique global health CBPR opportunity for a medical student. The specific aims of the project were developed through collaboration between the medical student, community mentor and academic mentors and include the following:

1. Defining the impact of falls in the elderly Latino population served by the UCC;
2. Determining possible barriers and recognizing possible strengths in this elderly population with regards to fall prevention;
3. Determining the level of interest within this population in various educational and fall prevention methods;
4. Training a medical student in cultural competence, the methods of CBPR and the science of fall prevention.

METHODS

Survey Development

Because a pre-existing fall-related survey validated with primarily Spanish speaking Latinos and at the appropriate literacy level could not be found upon literature search, an extensive literature search was performed by the medical student researcher to gather pertinent fall-related information to include on the survey.^{17,18,19,20,21,22} The survey asked about fall

history, risk factors, attitudes towards falls, and preferred methods for health information delivery. Risk factors examined were diabetes, muscle or nerve disease, arthritis, bladder dysfunction, stroke, vision problems, frequent dizziness, difficulty walking, polypharmacy, and depression.^{4,17}

A culturally-sensitive and linguistically accurate Spanish survey was developed in collaboration with both the community and academic partners. Latino staff members at the UCC who were trained in the areas of senior programming, dementia care and health education, including the directors of the UCC's elder programs, were consulted during the development of the survey questions. These community partners provided both expertise in the area of gerontology as well as in the area of Latino culture. In collaboration with the academic partners who specialize in injury –related research, a culturally sensitive fall-related survey was developed in English and then translated by UCC native Spanish-speaking bilingual staff. The survey was then pilot tested with 4 UCC staff members who were either over 60 years old or a care giver of a senior and who were native Spanish speakers and members of the local Latino community. Their suggested edits and feedback were then incorporated into the survey. The final English and Spanish versions were both approved by the MCW Institutional Review Board.

Recruitment and Community Engagement

A prospective survey was conducted with a convenience sample of elderly program participants from the UCC. The convenience sample included senior participants at the UCC Senior Center and Latino Geriatric Center, participants in the UCC's Un Nuevo Amanecer Depression Program, and clients of the UCC Family Care Unit. Recruitment was by word of mouth and by simply approaching prospective participants. The seniors were approached by the medial student researcher during their regular participation in UCC programs. Each prospective participant was read a short consent paragraph, and those who agreed to participate were read the survey questions in their preferred language. Their answers were then recorded by the student interviewer. Data was analyzed using descriptive statistics in Microsoft Access.

SURVEY RESULTS

One hundred and three participants were interviewed, approximately 25% of the total senior population served by the UCC. The total number of seniors approached was not recorded so no response rate was calculated. Subjectively the majority of seniors approached agreed to participate. Participant demographics were collected and the average age of participants was 73.2 years with the youngest being 52 and the oldest being 97. Respondents predominantly were women (63%), made less than \$10,000 per year (65%), had a high school education or less (64%), spoke only Spanish (83%) and lived independently in a house or apartment (79%). Sixty-seven percent had some form of government insurance and 15% were uninsured. (Table 1)

The results of the survey indicate a significant impact of falls in this population with 54% of respondents reporting a fall in the last year. Of those who had fallen, 21% required medical care, 81% were afraid of falling again, and 66% considered themselves at risk for falling

again. Seventy-one percent of all participants were afraid of falling, but only 35% allowed that fear to keep them from participating in activities.

The results also show a predominance of risk factors for falls within this population. We found that 52% had five or more of the 10 reported risk factors with the commonest reported risk factors being polypharmacy, defined as taking two or more prescription medications (75%) and vision impairment (63%). (Table 2) Only 4% of participants reported no risk factors.

Bivariate analysis was conducted by MCW faculty mentors to analyze the associations between falling and the reported risk factors (Table 2). The analysis showed a statistically significant increase in the percentage of participants reporting a fall who had at least one of the following risk factors: XXXXXXXXXXXXXXXX. Those reporting 5 or more of the reported risk factors were also more likely to fall than those reporting no risk factors, XXX.

To assess various attitudes toward falls that could either act as barriers or strengths to future fall prevention initiatives, various statements were read to participants and they were asked if they strongly agreed, agreed, were neutral, disagreed or strongly disagreed with those statements. Beliefs that were defined as possible barriers to and indicated less understanding of fall prevention included the following: (1) Falls only happen to those who are disabled; (2) A fall is the first sign you are getting old; (3) Falls are accidents that cannot be prevented; (4) Simple common sense is all that is needed to prevent falls; (5) If I fall, my family will think that I cannot be independent; (6) If I participate in a fall prevention program, others will think that I am old and frail.

Beliefs that could be possible strengths and indicated a greater understanding of fall prevention included the following: (1) I am concerned with falling; (2) I am at risk of falling; (3) A fall can happen to anyone, even someone who is strong and independent; (4) With strengthening and behavioral changes I can decrease my chance of falling. (Table 3)

In order to better understand the interest of the community, participants were asked if they were interested in receiving fall prevention information via various methods. Participants were most interested in talking with their health care provider and participating in an exercise class (preferred by 78% and 65%, respectively), and a radio program was the least favored method (preferred by 30%). (Figure 2)

EXPECTED OUTCOMES

This needs assessment clearly indicates that falls are a significant health problem in the UCC's senior population. The CDC reports that one out of every three adults over the age of 65 will fall each year, but among this sample of elderly Latinos, there is a higher incidence of falls with 54% of respondents reporting a fall in the past year.^{23,24} Additionally, almost 80% of participants stated that they were afraid of falling while over 60% felt that they were at risk for falling. Although an awareness of fall risk and a healthy concern with falling can be protective, a fear of falling can often be incongruent with actual physiological risk and lead to an avoidance of physical activities and an actual increase in fall risk.^{4,5,6,7,25} This risk is only increased by the predominance of fall risk factors with over half of participants

having 5 or more. With this high incidence of falls, fear of falling and fall risk factors, this study confirms the suspected need for a comprehensive prevention intervention within this subset of Latino seniors. The successful partnership between MCW and UCC is now expanding and focusing on the next phase of the project, using the data from this needs-assessment study to inform the development of a culturally-sensitive fall prevention program.

Developing a Future Fall Prevention Program

The results of the survey define several specific characteristics that are unique to this Latino population that must be addressed when developing a future prevention program. The main areas to focus on will include the following: overcoming language and education barriers while still utilizing popular methods of health information delivery, focusing on predominant risk factors, overcoming negative stereotypes to falls and fall prevention and recognizing and exploiting certain cultural ideologies.

Overcoming language and education barriers while still delivering information via preferred methods will be a major challenge to any future prevention program. Over 80% of participants only spoke Spanish and 78% percent of participants wanted to receive fall prevention information from their healthcare provider. However, participants consistently raised concerns about the lack of Spanish-speaking healthcare providers in their community. Additionally, only 32% of participants had at least a high school education with national statistics estimating that almost 40% of Hispanic adults have a below basic literacy level²⁶. Future prevention programs targeted at this Latino population should not only translate program materials into Spanish but at the literacy level appropriate for this population; additionally, the program must also address the need to connect the seniors with their primary healthcare provider. However, access to health care could be limited for many seniors in this population due to low income and insurance status.

Fall risk factors are prevalent in this population and must also be specifically addressed in our future prevention program. Polypharmacy and vision impairment were the most commonly reported risks factor (75% and 63%). A tailored prevention program must include sessions focusing on empowering participants to talk with their healthcare providers about their medications as well as on discussing problem medications that confer a greater risk of falling. Also it will be important to offer vision screenings and information on local Spanish-speaking optometrists and other eye health professionals.

There is reported interest in receiving fall prevention information via specific methods; however, there are several attitudes that could serve as barriers to a fall prevention program. Although a significant percentage of this group understands that falls can be prevented through strengthening and lifestyle changes, there is also a predominant attitude that falls are accidents and that accidents cannot be prevented no matter what changes or adjustments are made. This perception could be a barrier to recruitment for a fall prevention program as seniors who perceive falls as preventable and thus perceive a fall prevention class as useful will more likely participate.²⁷ In addition to viewing falls as preventable, it is important for seniors to view any fall prevention intervention as having several benefits beyond those directly affecting falls, including the following: enjoyment, improvement of general health,

mood and confidence and an opportunity to socialize.^{28,29,30,31,32} In this Latino population, however, there was a strongly negative perception that others would see them as old and frail if they participate in a fall prevention program. Other researchers have recognized this perception in other populations and encourage that the language of disease prevention and risk factors should be replaced with the positive language of empowerment and healthy living.^{28,29,30,31,32}

The UCC's elder population represents a variety of ethnic backgrounds from various Latin countries, predominantly Mexico and Puerto Rico (40% and 39%, respectively). Although there are differences between these various ethnicities, there are certain commonalities in traditional culture between the various Spanish-speaking peoples that should be taken into account when creating a fall prevention program for this population.³³ The terms machismo and marianismo describe the traditional roles of men and women, respectively, within the Latino family and community. Men are expected to protect and provide for the family and women are expected to be compassionate and devoted to family.^{34,35,36} Familismo emphasizes the importance of the family unit.^{27,37,38,39} It is important to remember that these cultural constructs are more important in a population of Latino elders where there are lower levels of education and lower rates of acculturation.^{40,41}

Although these cultural constructs were not directly explored in the survey, these were common themes recognized throughout the interviews, and it is the experience of the community partners that a culturally competent fall prevention program will need to be developed within the framework of these traditional Latino gender roles as well as within the cultural context of Latino self-identity and family. Recruitment will focus on the benefits of caring for oneself so one can continue to care and provide for ones family, and future programs will also be open to participation from family members and care givers. This will also help overcome the prevalent fear that other people will see fall prevention program participants as old and frail. We also foresee difficulty in recruiting men to a fall prevention program as seen with this needs-assessment with only 38% of participants being male.

LESSONS LEARNED

This needs assessment project met all of the outlined community and academic partner goals as well as offered several important lessons learned. The first lesson learned during this three year project was that placing a medical student at the center of a partnership between the UCC and MCW was a successful formula for meeting both community and academic partner goals. The goals of the community partner, namely to define the impact of falls in their elderly population, to determine possible barriers and strengths in this population with regards to fall prevention, and to determine the level of interest in various fall prevention methods, were all successfully achieved, and this information will now be used to further advance a fall prevention initiative. The goal of the academic partner was to offer a learning experience in CBPR, to enhance medical student education in cultural competence and to provide an opportunity to further research and study a specific topic in health care, namely fall prevention in the elderly.

We also learned that traditional medical education is enhanced by participation in this community-based health projects. The medical student began this project during the basic science-focused first year of medical school as a part of the global health education program at MCW and continued the project for three years through the clinically-focused third year. Working with and researching in a Latino population met the global health curricular goals by training the student in cultural competence, community partnership building, and CBPR methods. Additionally, studying fall prevention in seniors enhanced the student's clinical education by training the student in an important clinical topic.

Another lessoned we learned is that the expansion of this project into the actual development of a fall prevention program will further advance both the community and academic partner's overall goals. The partnership has already expanded to focus on the next stage of this project by recruiting three junior medical students. The original student shifted to a senior student mentor role and led the student group in conducting three pilot classroom sessions focusing on general fall prevention, vitamin D, home safety and balance exercises. The three new students have now transitioned to leadership roles and will be tasked with recruiting more junior students. Additionally, each new student will chose a specific aspect of the project to focus on that will meet his/her own interests and education goals. By initially expanding to include three more junior medical students, the fall prevention partnership has been able to create a sustainable initiative at the UCC and offer a variety of educational and leadership experiences for many medical students, thus further enhancing the goals of both the community and academic partners.

CONCLUSION

Falls in the elderly is a recognized public health burden in the United States but there is less understanding of the impact of falls in minority populations. The partnership between MCW and the UCC successfully defined the impact of falls and fall risk in a specific minority Latino senior population and is now expanding to address fall prevention within this population, all while offering unique educational opportunities to medical students. We believe that connecting a community partner with an academic partner via a medical student project is an effective formula for addressing falls and fall prevention in minority populations.

References

1. Centers for Disease Control and Prevention; National Center for Injury Prevention and Control. [cited 2011 Dec 7] Web-based Injury Statistics Query and Reporting System (WISQARS). 2007. Available from: <http://www.cdc.gov/ncipc/wisqars>
2. Department of Homeland Security Bureau of Health Information and Policy. [cited 2011 Dec 7] Injury Emergency Department Visits. Wisconsin Interactive Statistics on Health. 2007. Available from: <http://www.dhs.wisconsin.gov/wish/>
3. Department of Homeland Security Bureau of Health Information and Policy. [cited 2011 Dec 7] Injury Inpatient Hospitalizations. Wisconsin Interactive Statistics on Health. 2007. Available; Available from: <http://www.dhs.wisconsin.gov/wish/>
4. Painter JA, Elliott SJ, Hudson S. Falls in community-dwelling adults aged 50 years and older: Prevalence and contributing factors. *J Allied Health*. 2009; 38(4):201–207. [PubMed: 20011818]

5. Brozova H, Stochl J, Roth J, Ruzicka E. Fear of falling has greater influence than other aspects of gait disorders on quality of life in patients with Parkinson's disease. *Neuroendocrinol Lett.* 2009; 30(4):453–457. [PubMed: 20010494]
6. Vind AB, Andersen HE, Pedersen KD, Joergensen T, Schwarz P. The effect of a program of multifactorial fall prevention on health related quality of life, functional ability, fear of falling and psychological well-being. A Randomized Controlled Trial. *Aging Clin Exp Res.* 2010; 22(3):249–254. [PubMed: 19934621]
7. Zijlstra GA, van Haastregt JC, van Rossum E, van Eijk JT, Yardley L, Kempen GI. Interventions to reduce fear of falling in community-living older people: a Systematic review. *J Am Geriatr Soc.* 2007; 55(4):603–615. [PubMed: 17397441]
8. Ferreira FR, César CC, Camargos VP, Lima-Costa MF, Proietti FA. Aging and Urbanization: The neighborhood perception and functional performance of elderly persons in Belo Horizonte Metropolitan Area-Brazil. *J Urban Health.* 2010; 87(1):54–66. [PubMed: 19924540]
9. Chang NT, Yang NP, Chou P. The incidence, risk factors and consequences of falling injury among the community elderly in Shihpai, Taiwan. *Aging Clin Exp Res.* 2010; 22(1):70–77. [PubMed: 19934620]
10. Reyes-Ortiz CA, Al Snih S, Loera J, Ray LA, Markides K. Risk factors for falling in older Mexican Americans. *Ethnic Dis.* 2004; 14(3):417–422.
11. Reyes-Ortiz CA, Ayele H, Mulligan T, Espino DV, Berges IM, Markides KS. Higher church attendance predicts lower fear of falling in older Mexican-Americans. *Aging Ment Health.* 2006; 10(1):13–18. [PubMed: 16338809]
12. Clemson L, Cumming RG, Kendig H, Swann M, Heard R, Taylor K. The effectiveness of a community-based program for reducing the incidence of falls in the elderly: A Randomized trial. *J Am Geriatr Soc.* 2004; 52:1487–1494. [PubMed: 15341550]
13. Centers for Disease Control and Prevention. [cited 2011 Dec 7] CDC Falls Prevention Activities. 2010. Available from: <http://www.cdc.gov/HomeandRecreationalSafety/Falls/FallsPreventionActivity.html>
14. The United Community Center. Elderly program Impact grant report. 2011
15. The United Community Center. Pisando fuerte, a fall prevention program for the Latino aging community: Executive Summary. 2008
16. Association of American Medical Colleges. Cultural Competence Education. 2005 Available from: <https://www.aamc.org/download/54338/data/culturalcomped.pdf>.
17. Todd, C.; Skelton, D. [cited 2011 Dec 7] What are the main risk factors for falls among older people and what are the most effective interventions to prevent these falls? Copenhagen, WHO Regional Office for Europe. Health Evidence Network report. 2004. Available from: <http://www.euro.who.int/document/E82552.pdf>
18. Keele R. Development of the Exercise Motivation Questionnaire with Mexican American Adults. *J Nursing Measurement.* 2009; 17
19. Min J, Concepcion B. Cultural Values and Caregiver Preference for Mexican-American and Non-Latino White Elders. *J Cross Cult Gerontol.* 2009; 24:225–239. [PubMed: 19127418]
20. Boyd R, Stevens J. Falls and Fear of Falling: Burden, Beliefs and Behaviours. *Age and Ageing.* 2009; 38:423–428. [PubMed: 19420144]
21. Vaughn S. Factors Influencing the Participatin of Middle-Aged and Older Latin- American Women in Physical Activity: A Stroke Prevention Behavior. *Rehab Nursing.* 2009; 34(1):17–23.
22. Kilian C, Salmoni A, Ward-Griffin C, Kloseck M. Perceiving Falls Within a Family Context: A focused Ethnographic Approach. *Canadian J Aging.* 2008; 27(4):331–345.
23. Hausdorff JM, Rios DA, Edelber HK. Gait variability and fall risk in community-living older adults: a 1-year prospective study. *Arch Phys Med Rehabil.* 2001; 82(8):1050–1056. [PubMed: 11494184]
24. Hornbrook MC, Stevens VJ, Wingfield DJ, Hollis JF, Greenlick MR, Ory MG. Preventing falls among community-dwelling older persons: results from a randomized trial. *Gerontologist.* 1994; 34(1):16–23. [PubMed: 8150304]

25. Delbaere K, Close JCT, Brodaty H, Sachdev P, Lord SR. Determinants of disparities between perceived and physiological risk of falling among elderly people: cohort study. *BMJ*. 2010; 341:c4165. [PubMed: 20724399]
26. Kutner, M.; Greenberg, E.; Baer, J. U.S. Department of Education, National Center for Education Statistics. Washington. D.C.: U.S. Government Printing Office; 2005. A First Look at the Literacy of America's Adults in the 21st Century. Available from: <http://nces.ed.gov/ssbr/pages/adultliteracy.asp?IndID=32> [cited 2011 Jan 7]
27. Torres JB. Masculinity and gender roles among Puerto Rican men: Machismo on the U.S. mainland. *Am J Orthopsychiatry*. 1998; 68(1):16–26. [PubMed: 9494638]
28. Yardley, L.; Donovan-Hall, M.; Francis, K.; Todd, C. *J Gerontol B Psychol Sci Soc Sci*. Vol. 62B. Washington: 2007. Attitudes and beliefs that predict older people's intention to undertake strength and balance training; p. 119-125.
29. Commonwealth Department of Health and Aged Care. Canberra: Commonwealth of Australia; 2001. National falls prevention for older people initiative. Step out with confidence. Available from: [http://www.health.gov.au/internet/main/publishing.nsf/Content/F8258F38E1722BB1CA25702F00779E08/\\$File/fallsinfo.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/F8258F38E1722BB1CA25702F00779E08/$File/fallsinfo.pdf) [cited 2011 Dec 7]
30. McInnes E, Askie L. Evidence review on older people's views and experiences of falls prevention strategies. *Worldviews Evid Based Nurs*. 2004:20–37. [PubMed: 17147756]
31. Yardley L, Bishop FL, Beyer N, Hauer K, Kempen GI, Piot-Ziegler C, Todd CJ, Cuttelod T, Horne M, Lanta K, Holt AR. Older people's views of falls prevention interventions in six European countries. *Gerontologist*. 2006; 46(5):650–660. [PubMed: 17050756]
32. Yardley L, Donovan-Hall M, Francis K, Todd C. Older people's views of advice about falls prevention: A qualitative study. *Health Educ Res*. 2006; 21:508–517. [PubMed: 16467173]
33. Sue, DW.; Sue, D. *Counseling the Culturally Diverse: Theory and Practice* (Fifth Edition). Hoboken: John Wiley & Sons, Inc.; 2008. p. 375-387.
34. Garcia-Preto, N. Latino families: an overview. In: McGlodrick, M.; Giordano, J.; Pearce, JK., editors. *Ethnicity and family therapy* (Second Edition). New York: The Guilford Press; 1996. p. 141-154.
35. Arciniega GM, Anderson T, Tovar-Blank ZG, Tracey T. Toward a fuller conception of machismo: Development of a traditional machismo and caballerismo scale. *J Couns Psychol*. 2008; 55:19–33.
36. Vasquez MJT. Latinos and violence: Mental health implications and strategies for clinicians. *Cult Divers Ment Health*. 1998; 4(4):319–334. [PubMed: 9818521]
37. Bean RA, Perry BJ, Bedell TM. Developing culturally competent marriage and family therapists: Guidelines for working with Hispanic families. *J Marital Fam Ther*. 2001; 27(1):43–54. [PubMed: 11215989]
38. Marin, G.; Marin, BV. *Research with Hispanic populations*. Newbury Park, CA: Sage; 1991. p. 34-66.
39. Bernal, G.; Shapiro, E. Cuban families. In: McGlodrick, M.; Giordano, J.; Pearce, JK., editors. *Ethnicity and Family Therapy* (Second Edition). New York: The Guilford Press; 1996. p. 435-456.
40. Ruiz-Balsara SN. Gender belief systems and culture: The endorsement of machismo and Marianismo by Hispanics/Latinos across gender, acculturation, education, socioeconomic, and religion categories. *APA Dissertation Abstracts International Section A: Humanities and Social Sciences*. 2002; 62:3199. Available from: <http://psycnet.apa.org/psycinfo/2002-95005-135>.
41. Cianelli R, Ferrer L, McElmurry BJ. HIV prevention and low-income Chilean women: machismo, marianismo and HIV misconceptions. *Cult, Health, Sex*. 2008; 10(3):297–306. [PubMed: 18432428]

Table 1

Baseline Characteristics of Survey Participants (N=103)

Baseline Characteristics	N*	(%)
Age, years (mean)	73.2	
Gender		
Men	65	63
Women	38	37
Ethnicity		
Mexican	40	40
Puerto Rican	39	39
Other Latino	17	17
Preferred Language		
Spanish	83	81
English or Both	20	19
Education		
Less than High School	65	64
High School or Higher	32	31
Employment Status		
Employed	4	5
Retired	56	66
Homemaker or Unemployed	24	29
Yearly Income		
Less than \$10,000	56	65
More than \$10,000	27	35
Insurance		
Medicare/Badgercare	74	67
Private Insurance	7	7
Uninsured or Other	14	15
Marital Status		
Married	34	35
Divorced/Widowed/Single	63	32
Living Arrangement		
House	52	51
Apartment	28	28
Elderly Housing	19	18

* N values may not add up to 103 owing to missing values

Table 2

Fall Risk Factors Present in Population

Fall Risk Factor	% Participants Reporting Risk Factor	% with Fall History
Diabetes	46	57
Muscle/Nerve Disease	14	71
Arthritis	54	57
Bladder Dysfunction	36	68
History of Stroke	15	53
Vision Impairment	63	57
Dizziness	42	74
Difficulty Walking	55	59
Polypharmacy	75	63
Depression	50	64

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Attitudes Towards Falls

	Strongly Agree/ Agree
I am concerned with falling.	81%
I am at risk of falling.	69%
Falls only happen to those who are disabled.	30%
A fall can happen to anyone, even someone who is strong and independent.	97%
A fall is the first sign that you are getting old.	39%
Falls are accidents that cannot be prevented.	70%
Simple common sense is all that is needed to prevent falls.	84%
With some muscle strengthening and behavioral changes, I can decrease my chance of falling.	83%
If I fall, my family will think that I cannot be independent.	59%
If I participate in a fall prevention program, others will think that I am old and frail.	43%

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript