Self-Management Education and Arthritis Disability in the Underserved Latino Community

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Abstract

Purpose

 The purpose was to implement a self-management program to decrease pain and disability and improve self-efficacy among low-income, Latino individuals diagnosed with arthritis.

Background

All arthritis pain has the potential to impair mobility. Arthritis is the leading cause of disability among American adults, with over 50 million individuals affected. The Latino population experiences a disproportionate incidence of disability attributable to arthritis compared to other populations. Evidence supports self-management education incorporating physical activity as a promising intervention for arthritis.

Methods

The intervention included a curriculum developed by the Arthritis Association, three teaching sessions, and a pre/post-test. Anticipated outcomes included decreased pain measured by the Pain Visual Numeric, decreased report of disability measured by the Stanford HAQ, and increased self-efficacy measured by the Arthritis Self-Efficacy Scale. The setting was a faith-based medical clinic that services the uninsured population located within Southwest Arizona. Participants included Spanish and English speaking adults diagnosed with arthritis.

Results

Twelve participants were consented however, only eight participants completed the entire project. Although the mean pain score decreased, indicating reduced pain, it was not statistically significant (pretest- M=5.75 SD=3.19; posttest- M=5.25 SD=2.82; z (7)=-.11, p= .92). However, there was a statistically significant increase in reports of exercise after the intervention (pretest M=.83, SD=.39; posttest- M=.43, SD=.53; z (6)=-2.0, p =.046). This was in response to an non

validated question developed by the primary investigator and co-investigator of, "Do you

currently exercise?".

Conclusions

Results include increases in reports of exercise post-intervention and decreased pain. The use of

non-pharmacological interventions such as self-management to reduce pain and increase

mobility in arthritic patients can help lessen the socioeconomic health disparity gaps.

Chapter 1: Introduction of Project

Arthritis is a significant health problem within the U. S., often leading to decreased quality of life and disability in the individuals affected (Mascarenhas, Siegel, & Vaidya, 2013). Research has shown a higher incidence of negative outcomes and disability associated with arthritis specifically within the Hispanic population and impoverished populations generally in comparison to other populations residing in the U. S. (Barbour et al., 2013; Centers for Disease Control, 2011; Eakin et al., 2007; Perez-Escamilla, 2011). Research literature supports evidence-based health promotion interventions aimed at alleviating disability caused from arthritis in low income Latino communities. This manuscript reviews the incidence of arthritis within the underserved Latino population residing in the U. S. and outlines an evidence-based health promotion intervention of self-management education to improve pain and disability associated with arthritis.

Background and Significance

The term arthritis refers to damage of the cartilage, bone and soft tissue within joints often causing pain with movement or pressure (Fitzcharles, Lussier, & Shir, 2010). While there are more than 100 classifications of arthritis with differing pathophysiological etiologies, all arthritis pain has the potential to impair mobility and functionality (Fitzcharles et al., 2010; McDougall, & Linton, 2012). The presence of chronic pain associated with arthritis can result in an increased sensitivity to pain impulse due to secondary neuronal sensitization, further decreasing an individual's ability to cope with pain (Fitzcharles et al., 2010). The two main classifications and subsequent etiologies of arthritis are osteoarthritis, caused by degenerative structural damage, and inflammatory arthritis, caused by an immune response, resulting in

structural damage. While inflammatory arthritis treatment can delay further onset, there are

currently no absolute cures for any type of arthritis (Fitzcharles et al., 2010; McDougall, &

Linton, 2012).

Arthritis has been demonstrated to negatively affect quality of life in both the individual

and their families (Fitzcharles, Lussier, & Shir, 2010; Knittle et al., 2011). Some of the

consequences of chronic pain from arthritis include decreased marital satisfaction, decreased

sleep quality, increased risk of falls, financial burden, disability, immobility, and depression

(Arnold, & Faulkner, 2010; Barbour et al., 2013; Centers for Disease, 2011a, 2011b; Kelley, &

Kelley, 2014; Martire, Keefe, Schulz, Stephens, & Mogle, 2013).

Arthritis is widespread throughout the U. S. and the world, with an estimated 50% of

people worldwide affected by symptomatic arthritis by the age of 65 years old (Fitzcharles et al.,

2010). In the U. S. alone, arthritis is the leading cause of disability among adults, with over 50

million Americans suffering from its effects. The percentage of people affected by arthritis

shows no signs of slowing down, with experts predicting an 18% increase in the next 15 years

(Barbour et al., 2013; Baruth, Wilcox Sharpe, Schoffman, & Becofsky, 2014; Kelley, & Kelley,

2014; Wyatt, 2014).

Latinos represent the largest minority group within the U. S. Additionally, the group is

estimated to represent 25% of the population by 2050. Even with growing representation, the

Latino population continues to have disproportionate rates of poverty and suboptimal health as

compared to other ethnicities within the U. S. (Perez-Escamilla, 2011). According to the Centers

for Disease Control and Prevention, Latinos were found to have higher instances of advanced

arthritis severity and related disability when compared to the Caucasian population (Barbour et

al., 2013;

Brady, Jernick, Hootman, & Sniezek, 2009; Centers for Disease, 2011a).

Several studies have demonstrated outcomes indicating that Latino patients manage chronic disease differently than their non-Latino individuals (Brady et al., 2009; Cheriel et al., 2009; Carrington Reid et al., 2014; Lorig, Gonzalez, Ritter, 1995). In a study by Cheriel et al. (2009), Latinos with arthritis pain were surveyed and interviewed to determine aggravating factors associated with pain levels. The study found that Latinos with categorized with poor self-rated characteristics based upon questionnaire results, reported higher levels of arthritis pain. Additionally, the study found that Latinos with increased arthritis pain indicated a greater interest in arthritis management programs (Cheriel et al., 2009). Another study evaluating chronic pain and pain-related-anxiety in different ethnicity groups when matched based upon age, sex, education, duration of pain, and insurance, found that Latinos had significantly higher levels of pain-related-anxiety both pre and post treatment when compared to Caucasians (Gagnon, Matsuura, Smith, & Stanos, 2014).

Few studies have examined specific arthritis treatment intervention effectiveness among the Latino population (Brady et al., 2009' Cheriel et al., 2009, Lorig, Gonzalez,& Ritter, 1999; Parker et al., 2011). In one study evaluating the results of the 2007 National Health Interview Survey, Hispanic adults within the U. S., with doctor diagnosed arthritis, were less likely to utilize any complimentary or conventional healthcare treatment for arthritis when compared with other ethnicities (Hoerster, Butler, Mayer, Finlayson, & Gallo, 2012). According to Hoerster et al., (2012, p.15) "Hispanic individuals with arthritis may be at a particular high risk of unmet medical need for management of arthritis and co-morbid conditions." Findings by Hoerster et al. (2012) supported a previous report by Ezzati-Rice, Rohde, & Greenblatt (2008) which found Latinos to be at increased risk of not receiving primary care for arthritic conditions.

Furthermore, studies have found arthritis to be more prevalent among individuals having lesser educational levels and poor health status (Barbour et al., 201; Eakin et al., 2007). Another study found perceived helplessness to be a predictor of pain in individuals who live in urban communities and suffer from arthritis (Bhat, DeWalt, Zimmer, Fried, & Callahan, 2009). This evidence suggests there is a need for cost-effective, culturally sensitive, community driven interventions within underserved populations.

Problem Statement and PICOT Question

The medical director of an urban medical clinic in Southwest Arizona serving an underserved Latino community reported that non-pharmacological treatments for arthritis were underutilized. The ability of the clinic to offer physical therapy is dependent upon volunteer participation and therefore, use of this treatment modality is inconsistent (P. Lorentsen, personal communication, February 5, 2015). While self-management interventions have generated positive results in Latino populations with diabetes, and in general populations with arthritis, there is a need for further research on the effect of an arthritis self-management intervention within underserved Latino populations (Eakin et al., 2007; Lopez-Class, & Jurkowski,2010; McKnight et al., 2010; Wang et al., 2014; Wu, Kao, Wu, Tsai, & Chang, 2010). This investigation of literature led to the clinically relevant PICOT question, in underserved Latino patients with arthritis, how does undertaking a curriculum of arthritis self-management affect the level of pain, self-efficacy, and disability after four weeks, compared to the current standard of care?

Search Strategy

An initial internal evaluation of clinic patient needs was the starting point for the further exploration of non-pharmacological intervention to improve arthritis pain and disability. An early search of arthritis in Hispanics spurred on the outcome measures of disability, self-efficacy, and pain within the PICOT, given the statistics of increased severity of arthritis associated specifically within this population (Barbour et al., 2013; Eakin et al., 2007; Perez-Escamilla, 2011). Preliminary searches of non-pharmacological interventions for arthritis within the underserved and or Hispanic population lead to a narrowed search of specific arthritis self-management education intervention options. The databases searched for this literature review include CINAHL, Pubmed, The Cochrane Library, and MedlinePlus.

Index terms utilized for the searches in the CINAHL database included arthritis, Hispanic, Hispanics, Latino, pain, non-pharmacological interventions, self-management, self-management, disability, pain, musculoskeletal pain, education, Spanish, quality of life, Mexican, depression, low income, poverty, mail-delivered, United States. Limits applied included full text, English language, and dates from 2009-2015 were applied initially and then revised. For the search using CINAHL database, the dates were expanded when the searches included three terms such as Hispanic AND self-management AND pain. During the initial search of the term of arthritis by subject, 7,124 studies were found. However, when the term arthritis AND self-management was searched no studies were located. When the term search requirement was reset as AB abstract, 50 studies were located with the 2010-2015 timeframe. However, when the term Hispanics was added to the original search, this narrowed the search to two studies. Based on previous results, the author of one of the studies located (K. Lorig), was added to the search using the CINAHL database. Further studies from which arthritis self-management programs were originally formulated were found.

The Pubmed was searched using the terms musculoskeletal pain, education, Hispanic, Latino, self-management, arthritis, and, self-management or education. The search identified 851 studies with the terms arthritis AND self-management OR education and was narrowed further to 16 studies using arthritis AND education AND Hispanics, which were then manually reviewed. A hand ancestry search was then performed on the applicable studies identified from the initial 16 studies located.

The Cochrane library was searched with the terms arthritis, education, Hispanics, Latino, musculoskeletal pain, and depression screenings. The Cochrane library identified five reviews and one protocol using the terms arthritis AND education. However, a manual review revealed only two of the reviews and the one protocol were relevant to the investigation. Seven studies were identified using the terms Hispanics AND pain AND education, however only two of these studies reviewed self-management techniques with arthritis, with one of the two studies being published in 1999. The Medline plus database produced 99 results for the terms arthritis AND self-management, however many of these were not applicable and were manually eliminated.

Following an extensive search for literature on arthritis self-management education in Hispanics, ten studies have been chosen for inclusion (Appendix C, Evidence Table). Roughly 40 studies were reviewed initially during the selection process, however many of the studies were discarded due to being outside the five-year protocol, lack of correlation with multiple aspects of the PICOT, weak descriptive or statistical information, and impertinent data. Nevertheless, it is important to note that judicious exceptions were made regarding the within five-year protocol due to the lack of evidence available which included all aspects of the PICOT question specifically relating to the setting of low income and or Hispanic population. Specifically, the study of Lorig, Gonzalez, and Ritter (1999), has served as a framework for other

self-management programs and therefore its inclusion was deemed appropriate. Additionally, the

author included several studies that did not take place specifically within the low-income and/or

Hispanic population due to the lack of recent studies done within these populations.

Nevertheless, all of the studies selected had at least one established intervention of an arthritis

self-management class or chronic disease self-management class.

Evidence Synthesis

In evaluation, the chosen studies were of good quality while maintaining relevance to the

planned intervention population (Appendix D, Synthesis Table). Five of the ten studies chosen

were randomized control studies lasting a minimum of six months and producing level II

evidence. The additional five of the ten studies were at minimum quasi experimental or

longitudinal in design and produced level III evidence. One of the challenges of gathering quality

evidence was finding articles pertinent to the clinic's underserved Hispanic population. The ten

articles reviewed shared a moderate degree of homogeneity in regards to intervention relating to

arthritis self-management and populations affected by arthritis. All of the studies evaluated

arthritis specific self-management programs, with the Arthritis Self-Management Program

originally developed by Lorig (1996) being implemented or used to guide intervention in seven

of the ten studies. Additionally, four of the ten studies included Spanish speaking interventions.

Unfortunately, excluding studies not having a Spanish speaking intervention did not allow for

enough studies with a quality level of evidence to be gathered, therefore six other studies with

high level of evidence and relevance were included. Each of the studies included a large subject

population ranging from 112-921 subjects, increasing reliability. Additionally, nine of the ten

studies evaluated pain levels using a numerical pain scale, thus establishing its validity.

Furthermore, while the majority of the study interventions lasted six weeks, eight of the ten

studies length of evaluation persisted six months or greater, evaluating for the persistence of

change, thereby enhancing the sensitivity achieved. One limiting factor was the variance in

inclusion criteria for arthritis and whether specific types of arthritis were included. Another

possible limitation of the studies authored by Lorig is the potential bias due to the current

funding she receives from the sale of her specific arthritis self-management curriculum (Stanford

School of Medicine, 2015). Of the nine studies that evaluated pain level, all of them found

decreasing pain level results, with five of the nine decreased pain level findings being

statistically significant. Six of the ten studies evaluated disability and found decreasing disability

results, with only two these being statistically significant (Appendix D, Synthesis Table).

Some of the strongest evidence favors treatment of arthritis which facilitates patient

involvement and thereby feelings of control. One of the most efficacious ways to facilitate

patient involvement is by way of self-management strategies. Self-management strategies have

been shown to improve physical, psychological and biological functioning, and are supported by

the American College of Rheumatology (Fitzcharles et al., 2010, McKnight et al., 2010).

Arthritis self-management interventions entail educating patients about their disease and

associated beneficial health behaviors such as goal setting, positive thinking, and physical

exercise. Self-management of arthritis fosters development of behavior change and knowledge

installation (Laforest et al., 2007; Lorig, & Fries, 2006; Palmer, & Midany, 2012).

Research suggests that culturally tailored programs may increase the utilization of

suggested arthritis interventions (Carrington Reid, Chen, Parker, Henderson, & Pillemer, 2014;

Lorig, Gonzalez, & Ritter, 1995; Wyatt et al., 2014). In a study by Lorig, Gonzalez, & Ritter

(1999), a six week culturally adapted arthritis program offered to Spanish speakers was found to

have similar results when compared with previous arthritis program studies done among English

speaking populations. In another study by Carrington Reid et al. (2014) comparing culturally adapted arthritis self-management programs versus the original program, the culturally adapted arthritis self-management program was found to have significantly better attendance and retention. Additionally, depression levels showed a significant decrease when comparing the culturally adapted program versus and the original program (Carrington Reid et al., 2014).

Many arthritis patients are given analgesic medications as a part of the symptomatic management of pain associated with arthritis. The chronic nature of arthritis pain coupled with the negative side effects associated with many analgesic medications makes pharmacological treatment of arthritis alone sub-optimal (Lim, & Doherty, 2011; McDougall, & Linton, 2012). According to several systematic reviews, the non-pharmacological intervention of regular low-impact exercise has been shown to improve functionality and decrease pain in patients with both inflammatory arthritis and osteoarthritis (Fransen, McConnell, Hernandez-Molina, Reichenbach, 2014; Hurkman, Van Der Giesen, Vliet Vlieland, Schoones, Van den Ende, 2009).

Exercise and self-management education are feasible interventions within underserved communities with limited funding (McKnight et al., 2010; Wyatt et al., 2014). However, despite this well documented outcome, studies have shown patients with rheumatoid arthritis are less likely to partake in regular exercise than the general population (Knittle et al., 2011). Investigation into strategies to best motivate those afflicted with arthritis has been the topic of many recent research studies. Studies suggest arthritis patients with increased levels of self-efficacy for physical activity are more likely to attain the recommend amount of physical activity (Baruth et al., 2014; Knittle et al., 2011; McKnight et al., 2010; Mendelson, McCullough, & Chan, 2011; Ory et al, 2014; Wu et al., 2010).

Purpose Statement

The purpose was to implement a self-management program to decrease pain and disability and improve self-efficacy among low-income, Latino individuals diagnosed with arthritis. This project offered a cost-effective arthritis treatment that was not being utilized within the clinic servicing the local uninsured primarily Latino population.

Study Questions

The following are several questions used to guide the implementation and analysis of the project. Does a self-management arthritis program increase patient reports of exercising?? Are the arthritis treatments of physical therapy, heat or cold application, steroid injection, oral pain medication, and or exercise currently being utilized by uninsured patients diagnosed with arthritis? Does a self-management arthritis program decrease pain and arthritis related disability in an uninsured Latino population? Does a self-management arthritis program increase self-efficacy in an uninsured Latino population?

Chapter 2 Applied Clinical Project: Methods & Results

Having established a foundation of evidence regarding a project facilitating an arthritis self-management implementation, the specifications of this particular evidence based project will be discussed. An evidence project must be plainly grounded in theory. The evidence based practice model and conceptual theories used to guide the development of the intervention will be described. Project methods will be described including ethics, setting, organizational culture, participants, procedure, outcome measures, data collection and analysis plan, and proposed budget. Project results, strengths and limitations of the project will also be identified. The purpose of this chapter is to discuss the implementation and results of an evidence-based project designed based upon the nursing theory and a thorough evaluation of current practice evidence.

Evidence Based Practice Model

The Rosswurm and Larrabee model was identified to guide the project implementation. The model was chosen because of its focus on nurse-initiated change, thoroughness of steps, and its application to the primary care setting (Rosswurm, & Larrabee, 1999). The six stages of this model include need for change, problem intervention, synthesize best evidence, design practice change, implement and evaluate this change, and integration with maintenance of this change. The first step of assessment was accomplished by interviewing clinic staff to elicit concerns. During the second stage of the model, arthritis self-management programing with the goal of decreased pain level and disability levels was identified as a possible intervention. In stage three best evidence was synthesized and in the fourth, the intervention was tailored to meet the unique population need that the clinic serves. Staff and financial resources were identified during this stage. In the fifth step stage the project was implemented. During the last stage of integration, all clinic staff members were informed about the results and plans for sustainability were discussed.

Theoretical/Conceptual Framework

A theoretical framework serves to lead the investigator's perspective by helping to define the variables and the relationship between them (Moran, Burson, Conrad, 2014). Social cognitive theory (SCT) (Bandura, 2001) was the theoretical framework that guided the specific intervention. This theory postulates knowledge is acquired not only by the action of doing or behavior, but through attention to the environment and personal experience (Appendix B). Environment refers to the physical influences such as a person's living environment or resources available. Personal experience is the way an individual perceives a situation or behavior. This perception is affected by the environment and individual knowledge in a reciprocal motion

(McCabe, Plotnikoff, Dewar, Collins, & Lubans, 2015). Social Cognitive Theory emphasizes the importance of individual perception and experience within the learning process (Butts, & Rich, 2011). According to Bandura (2004), "Knowledge of health risks and benefits creates the precondition for change" (p.145). When applied to health promotion, SCT has several "core determinants" including knowledge, perceived self-efficacy, outcome expectations, goals, perceived facilitators, and impediments (Bandura, 2004, p. 145). The literature review indicates that seven of the ten retained studies utilize the SCT framework, and applicability to self-management interventions is well established (Appendix C, Evidence Table). This framework has also been well established in its application to self-management interventions within numerous other previous studies (Vorderstrasse, Shaw, Blascovich, & Johnson, 2014).

Some of the environmental factors specific to the project site and the participants include the lack of financial resources, constraints in available providers and physical therapists, restrictions in transportation, and limitations in pharmacological interventions specifically related to steroid injection. This environment informed an intervention which is low cost, accessible, and self-driven. The behavior identified within the intervention is self-management specifically related to physical activity, arthritis pain, and disability management. Specific personal factors of the project's participants include arthritis knowledge, personal motivation, self-efficacy, perceived support, and availability of resources. The outcome measurement of self-efficacy is specific to the behavioral and knowledge components of the SCT by which health changes are achieved. The outcome measurements of pain and disability address the final outcomes driving the intervention.

All of these aspects of SCT discussed above are included within the curriculum chosen for implementation (Arthritis Foundation, 2010). The Walk with Ease curriculum begins by

building a knowledge base so that participants can better understand their specific arthritis

diagnosis. Upon establishing a basic understanding of arthritis, participants are given the tools in

order to formulate a self-led walking program guided by participant goals. Environmental factors

specific to arthritis pain management and implementing exercise are discussed. The curriculum

also identifies potential environmental and behavioral barriers and allows the participants to

create proactive strategies to combat such barriers.

Walk with Ease (2010), has demonstrated effectiveness in several studies in both the self-

directed and group format. Nyrop, Cleveland, & Callahan (2014) evaluated the group format

versus the self-directed format of the Walk with Ease program and found an increase in time

walking was recognized in both formats with results maintained a year after completion of the

program. Another study evaluating the curriculum in a minority population, Wyatt etal.(2014)

found that both the self-directed and group format participation resulted in significantly less pain

and stiffness among a minority population, with these results remaining constant when evaluated

one year after completion of the program (Wyatt et al., 2014).

Cognitive Learning Theory was also utilized as a conception framework within the

implementation of the entire project structure to guide the educational component from which

the entire project formation is based upon (Butts, & Rich, 2011; Matlin, 2005). Within this

theory, it is posited that learning is motivated by one's goals and expectations. The process of

learning involves assessing whether one is ready to learn, engaging in appropriate learning

activities, and then allow the individuals to realize what they have learned themselves (Butts, &

Rich, 2011; Matlin, 2005).

Within the proposed project, the participant receives an initial teaching on arthritis by a

nurse with the content based upon the Walk With Ease curriculum. The participant is guided on

how to formulate arthritis self-management goals after receiving education about the arthritis diagnosis and treatment options. The patient is then encouraged to begin a self-guided walking program and encouraged throughout this process by receiving voluntary phone calls from the nurse and opportunities to attend arthritis support group meetings to facilitate increased knowledge development and associate behavior change. Four weeks after the initial teaching, the participant is given the opportunity to evaluate their own goals through reflection of the initials goals created and post-survey completion.

Logic Model

Logic models aid in allowing Project stakeholders to visualize the assumptions, inputs, outputs, outcomes and impacts of a proposed intervention. This can lead to an enhanced partnership and communication among inter-disciplinary team members (Hickey, & Brosnan, 2012). The following is a brief synopsis of the logic model for the proposed intervention (Appendix A). The inputs identified within the logic model include the clinic staff providers, patients with arthritis diagnosis, and the self-management curriculum being utilized. The outputs targeted at the patients within the clinic include distributing the self-management curriculum, arthritis education, and referrals for education and curriculum. The short term outcomes include increase in knowledge of arthritis coping skills and resources, how and why to exercise, and non-pharmacological interventions, change in walking skills, change in attitude towards exercise, increase in awareness of self-management technique and arthritis resources, change in attitudes towards arthritis, and increased understanding of condition and resources. The medium outcomes include less requests for joint injections, increase in walking, decreased use of prescription pain medication, increased self-confidence, increased involvement in own health, and increased utilization of non-pharmacological interventions. Long-term outcomes include possible weight

loss, decreased pain level, decreased level of depression, increased self-efficacy, increased

compliance with arthritis therapy, increased quality of life, decreased cost associated with

arthritis diagnosis, and increased patient productivity. Impacts include sustained promotion of

arthritis education spread to the underserved Hispanic community, decreased comorbidities

associated with arthritis, decreased amount of surgery related to arthritis, and improved patient

and provider satisfaction related to treatment of arthritis.

Project Methods

      Ethics.

      All written materials of the project including the consent, recruitment flyers, welcome

letter, pre-tests, and post-test were translated from English to Spanish using one interpreter and

then were translated from Spanish to English by another interpreter with the two translations

compared for accuracy of translation and to identify any discrepancies between the two

interpreters. Both interpreters had been approved by local hospitals to interpret Spanish and

English. Several minor differences in the translation were identified due to locational differences

in the Spanish language. The two interpreters reviewed the differences and agreed upon the best

translation based upon information given from the clinic that most of the Spanish speaking

participants would understand Spanish adapted from Mexico best. The final translation was

reviewed and verified by both interpreters. Final Spanish versions of the

consent/recruitment/measures with a translation certificate were submitted to Arizona State

University Institutional Review Board once the English versions were approved by the

Institutional Review Board and prior to starting project recruitment and implementation. The

project procedures, all written materials, and consents were reviewed and approved by the

Arizona State University Institutional Review Board (Appendix E) prior to implementation. Site approval from the medical director of the clinic was obtained (Appendix F).

Flyers (Appendix G) in Spanish and English were placed in the clinic waiting room, exam rooms, and available to providers to hand to patients diagnosed with arthritis. If interested, potential participants filled in their name, email, preferred language and gave the tear off portion of the contact information to the unit scheduler or staff nurse. The information was given directly to the co-investigator if she was present or put it in a designated envelope kept in a secure file within the clinic.

The co-investigator was available at the clinic two days per week, so that if patients were interested, they could complete the informed consent (Appendix H), receive the welcome letter (Appendix I) take the pretest (Appendix J) and receive scripted teaching (Appendix K) and Walk with Ease (Arthritis Foundation, 2010) curriculum (Appendix L) in Spanish or English. The participants could also elect to meet at another pre-arranged time with the co-investigator if this was more convenient for the individual. Potential participants were contacted by the co-investigator, using the assistance of an interpreter if appropriate, by phone and/or email provided by the potential participant. The potential participant received information about the project and times available to meet with the co-investigator to review the consent. On days when the co-investigator was not present, patients could make an appointment with the co-investigator facilitated by the clinic staff.

Access to the data during the completion of the project was provided to the primary investigator and co-investigator only. The data was stored in a locked file within the clinic. There was no audio or video data collected. No data was stored on the computer during the implementation phase of the project. All encrypted data will be stored on a password protected

computer during the statistical analysis. A master list of the participant's full name, phone number, and preferred language will be stored separately from the data in an envelope in a locked file within the clinic for follow up phone calls conducted by the co-investigator. The master list will be destroyed immediately after the data is linked. The identity of the participants was protected during and after the project concluded. No identifying data was collected throughout the project. All consents, pre-tests, and post-tests were stored securely in a locked file within the clinic and the master list was stored separately from the data in a separate locked file within the clinic. All consents, pre-tests, and post-tests were shredded at the conclusion of the project. The master list was destroyed immediately after the data was linked.

Participants.

Adults with a diagnosis of arthritis due to any etiology were recruited for this project. Inclusion criteria consisted of the following: Spanish or English speaking, medical diagnosis of arthritis due to any etiology, age 18-90 years old, and receiving care at the clinic. Exclusion criteria were: pregnancy, and adults unable to provide consent. All participants received clearance from a healthcare provider prior to participation in the walking portion of the program. Participants who were advised to refrain from walking activity by their medical provider were still able to participate in non-walking portions of the intervention.

Setting and organization culture.

The setting for this project was a medical clinic located in Southwest Arizona. The clinic services the local uninsured population using a sliding scale payment option and conducted over nine thousand patient visits in 2015. The project site is composed of two staff medical providers, two staff nurses, and several administrative staff. The project site operates on charitable

donations and grants and is staffed with medical volunteers including medical providers in over

50 specialties, nurses, and interpreters.

Procedure.

After participants were consented, the pre-test was offered in the participant's choice of

Spanish or English. The pretest was marked with the participant's unique identification number.

The pretest included a demographic questionnaire developed by the primary investigator and co-

investigator, a question regarding exercise developed by the primary investigator and co-

investigator, and three validated instruments measuring pain, self-efficacy, and arthritis related

disability. The demographic information included age, gender, and ethnicity. Additionally, each

participant was asked to list any planned upcoming surgeries. All of the participants were given a

book in Spanish or English, Walk with Ease, and received scripted teaching on how to use the

book, Walk with Ease, and self-management skills. The participants learned about arthritis

conditions, passive range of motion, setting goals, pain management, and arthritis resources. This

information is designed to empower the participant to better self-manage arthritis. The co-

investigator communicated with Spanish speaking participants through the use of an onsite

interpreter and her own language skills.

After the first meeting, participants were invited to attend two optional meetings at the clinic

for arthritis self-management and were given a schedule of future meetings. The participants

were included within the project even if they did not attend the optional meetings. During the

two optional meetings, participants received further education on exercise and arthritis self-

management skills. Each of the optional meetings lasted for 30-60 minutes. The participants

were given time to ask questions, share any concerns, and report what may be working for them.

The patients received a follow up phone call over the course of the project after each of the three meetings.

Participants had the opportunity to answer the post-test after the third meeting, at approximately week four. The post-test (Appendix M) could be completed by phone call, mailed in post-test or coming back into clinic during the third meeting or during a scheduled appointment to fill out post-test. The participants wishing to mail the post-test were provided a stamped, addressed envelope with instructions to mail the post-test 4 weeks after the initial meeting.

In lieu of visits, participants could choose to receive phone calls. A script was provided for the phone calls. During these phone calls the co-investigator will check on the participant's progress, answer any questions, and extend the invitation to the face to face meetings.

Outcome measures.

The primary outcomes for this intervention include level of disability, pain level, and arthritis self-efficacy. All of the instruments used for these outcomes had been previously validated in Spanish and English. Additionally, a non-validated question developed by the primary investigator and co-investigator regarding current exercise was included in the pretest and posttest. Pain was assessed by the Pain Visual Numeric (Appendix N). This is a one item scale consisting of the statement, "We are interested in learning whether or not you are affected by pain. Please circle the number below that describes your pain in the past 2 weeks" (Ritter, González, Laurent, Lorig, 2006, p. 576). It is a numerical scale with scoring ranging between zero to ten, with higher number value indicating greater amount of pain (Ritter et al., 2006). In one study, evaluating the reliability, the Spanish Version of the 0-10 Visual Analogue Pain Scale and the Visual Numeric Pain Scale, the correlation was r=0.72 (Wallen et al., 2011). The level of

disability will be assessed by Stanford HAQ 8-Item Disability Scale (Appendix O). One of the

eight questions within this scale is, "At this moment, are you able to dress yourself, including

tying shoelaces and doing buttons?" (Lorig, Sobel, Ritter, Laurent, Hobbs, 2001, p. 258). It is

graded on a Likert scale with the options being, "Without any difficulty, without much difficulty,

with much difficulty or unable to do" (Lorig et al., 2001, p. 258). The test-retest reliability for the

Health Assessment Questionnaire Disability Index ranges from 0.87 to 0.96 (Wallen, Middleton,

Rivera-Goba, Mittleman, 2011). Spanish translations of the instrument were found to have good

reliability with internal consistency measuring Cronbach α of 0.87 to 0.89 (Wallen et al., 2011).

The patient's arthritis self-efficacy level will be assessed by the Arthritis Self-Efficacy Scale

(Appendix P). One of the questions used to determine self-efficacy using this scale is, "How

certain are you that you can decrease your pain quite a bit?" (Lorig, Brown ,Ung, Chastain,

Shoor, & Holman, 1989, p. 40). This scaled was graded using a numerical scale of one to ten

with one representing "very uncertain" and ten representing "very certain". The greater value

equivocates an increase in self-efficacy (Lorig et al., 1989, p. 40). This outcome measure has

been shown to have reliability Cronbach α=0.93 in persons of Central American and Mexican

descent (Wallen et al., 2011). Exercise was assessed by a non-validated question developed by

the primary investigator and co-investigator. The question stated "Do you currently exercise?"

with available answers of "yes" or "no". This exact question was written on the pre-test and post-

test. The question was translated and back translated to be available for a Spanish and English

version of the pre-test and post-test.

Data collection and analysis plan.

Data collection consisted of a demographic questionnaire developed by the primary

investigator and co-investigator, a non-validated question regarding current exercise developed

by the primary investigator and co-investigator, and three validated instruments given to the

patient prior to the intervention, and three validated instruments and one demographic question

completed four weeks after the initial education session was received. In addition, to measuring

the outcomes of pain, self-efficacy, and disability, the pre-survey was also used to collect the

following information: the patients age, gender, whether the patient identifies as Latino, current

arthritis interventions being performed, plans of any upcoming surgeries, and current exercise.

Statistical analysis was conducted utilizing H. Wilcoxon Test. The investigator evaluated pre-test

and post-test. P<.05 was considered statistically significant due to small sample size.

Project Results

The study included 12 participants that were consented, with 8 participants completing

both the pretest and posttest, n=8. Demographics collected included age, gender, ethnicity,

previous arthritis treatments utilized, current exercise performed, and planned upcoming

surgeries (Appendix R).   Mean age was 54 years old, 75% of participants were female, 91.7%

identified as Hispanic ethnicity, 83.3% reported not exercising prior to intervention, 33.3%

received steroid injections and 8.3% utilized heat/cold therapy or physical therapy. However,

while not statistically significant, the intervention did show a decrease in pain level using the

pain scale (pre-intervention M=*5.7*, SD=3.19, post-intervention M=5.2, SD=2.82 z (7) = -.11, p=

.92). There was statistically significant difference between a report of current exercise pre and

post intervention, however no conclusions can be drawn due to low sample size. While not

statistically significant, the disability instrument total score increased from M=2.41, SD=.93 pre-

intervention, to M=2.66, SD=.41 post intervention indicating less disability. In evaluation of self-

efficacy, higher scores indicated greater self-efficacy and were scored on a scale of 1-10. All of

the scores increased after the intervention except for the question regarding management of

fatigue. The total scored self-efficacy instrument increased from pre-intervention, M=6.27,

SD=2.86 to post-intervention M=7.07, SD=2.42, but was not statistically significant.

Discussion of Results

The use of non-pharmacological interventions, such as an arthritis self-management

program, have demonstrated the ability to reduce pain and associated disability, while increasing

mobility in arthritic patients in order to facilitate lessening the socioeconomic health disparity

gap. Potentials for practice change include educating the clinical medical providers to encourage

utilization of non-pharmacological interventions and encouraging ongoing utilization of arthritis

self-management classes. While the question regarding current exercise that was developed by

the primary investigator and co-investigator was statistically significant, the sample size was low

and the question had not been previously validated. Further validation of this question is needed

before any conclusion can be drawn regarding the results.

Project findings were consistent with literature regarding the relationship between the

Latino community and arthritic resource utilization. The participants for this projected reflected

previous study outcomes regarding underutilization of arthritis resources as reflected in the

analysis of pre-intervention therapies utilized (Hoerster et al., 2012). The application of a self-

management education program was appropriate for the population with the results of decreased

pain level and disability scores, with increase self-efficacy level being similar to the evidence

review results from previous studies regarding arthritis self-management.

One of the greatest barriers during the implementation of the project was the language

barrier and the need versus availability of interpreters on site and ongoing volunteer needs. In the

future, implementation of this intervention would be enhanced if the facilitator spoke the same

language as the participants. This barrier could be overcome by utilizing community health

workers as facilitators of the arthritis self-management group.

A critical component of the project was the baseline health of the participants. One of the

greatest challenges encountered was unforeseen hospitalizations, surgeries, and injuries

encountered by the participants. Comorbidities experienced by the participants in this project

were similar to previous studies emphasize the need for tailored evidence based interventions for

this population (Hoerster et al., 2012). Due to the comorbidities of the patients and the nature of

arthritic disease, future project evaluation may be benefit from a longer time period of data

collection beyond the four-week time span. Many of the articles analyzed in the formulation of

the project extended data collection period to up to a year and were able to include more

participants making the statistical data more robust.

Another limitation was the lack of access to rheumatic medications due to costs limiting

participation in any type of exercise program. Further research into cost effective rheumatic

medication to control rheumatoid arthritis specifically was reiterated during the group meeting

and phone discussions between the participants and the co-investigator. Consistent with the

literature, socioeconomic influences of health in reports by participants such as inability to afford

medication, lack of transportations, and inability to rest due to strenuous job demands. Also, the

co-investigator found that the participants were willing to exercise but had not been given

enough specific information to initiate healthy exercise habits prior to implementation.

Conclusion

Despite significant challenges, decreases in pain level and associated disability, and

increases in exercise levels and self-efficacy occurred reflecting current literature (Appendix C).

While the statistical significance of the results cannot be verified due to small sample size the

results of decreased pain level and disability, and increased self-efficacy indicate this project has

the potential to improve quality of life in patients diagnosed with arthritis. In addition, the

importance of facilitating self-management techniques among patients in underserved population

was reinforced.

Chapter 3: Organization/Health Policy Impact & Sustainability

Research is only useful when applied to inform evidenced based interventions within

practice. Without application, research remains a stagnant aspect of academia. Potential impact

and significance of the project using a systematic approach are explored in this chapter including

local and national system influences, financial implications, impacts of current policy and future

policy, leadership role formation, sustainability, gaps identified, and implications for future

research.

Potential Impact

The potential impact of the intervention relates to the outcomes of increasing self-

efficacy, increasing exercise utilization, decreasing disability and pain related to arthritis. While

the increase in self-efficacy was not statistically significant, the outcome after the intervention

still resulted in higher levels of self-efficacy. According to Gandoy-Crego, Clemente, Gomez-

Cantorna, Gonzalez-Rodriguez, & Reig-Botella (2016), "self-efficacy is one's personal

estimation of being capable of carrying out a specific behavior". Within this specific

intervention, an increase in self-efficacy has the potential to increase utilization of arthritis

treatments. This is especially noteworthy within this specific population, given the low number

of participants who reported utilizing the treatments of physical therapy, heat/cold application,

and or exercise prior to the intervention.

While the main outcome focuses of the project were self-efficacy, arthritis disability, and pain level, exercise usage was evaluated as a part of ongoing arthritis treatment. While statistical significance was difficult to determine based upon the low volume of participants, there was an increase in reports of exercise on the post-test when compared to the pre-test. This increase in exercise, as a possible effect of the self-management techniques, may have contributed to the outcome of decreases in pain after the project.

Another interesting aspect of the intervention was the patient's receptiveness to follow-up phone calls. Throughout the intervention phase, all of the patients elected to receive voluntary phone calls on the meeting off-weeks and expressed appreciation over receiving the phone calls. This speaks to the importance of continuing communication regarding arthritis management on an ongoing basis. Because of the demands of the clinic, 30-50 walk-in patients per month are turned away and must seek care elsewhere. The ability to provide quality care while remaining available for the community needs remains challenging given the limited resources.

The potential impact of this intervention is not limited to the patients but has ramifications that extend toward providers. This intervention has the potential to enhance the awareness of provider-patient communication as it relates to arthritis education. Further implications include utilizing a more inter-professional approach to arthritis treatment. Prior to the intervention, management of arthritis was conducted by the medical provider. This intervention utilized an interdisciplinary approach, whereby the medical provider and the nurse were both engaged as a part of arthritis management. According to one study evaluating arthritis education in primary care, results indicated that arthritis care might be improved by an interdisciplinary approach that utilized nurse practitioner and rehabilitation therapist within

treatment (Lineker, Bell, & Bradley, 2011). These results necessitate consideration of a more interdisciplinary approach in the future.

Financial Impact

The prevalence of arthritis within the U. S. presents an enormous financial burden, with an estimated $128 billion being attributed to medical care cost and lost earnings associated with arthritis in 2003 alone (Barbour et al., 2013). A low cost intervention such as arthritis self-management education has the potential to improve pain levels and disability levels of patients in a manner more financially feasible and with greater long term benefits when compared to the current practice of steroid injection and pharmacological treatment alone. Also, given the fact that the clinic operates on nursing and medical provider volunteers, the feasibility of continuing this intervention from a financial standpoint is positive.

Currently, the patient pays thirty dollars for a primary care visit, twenty dollars for a medication refill, forty dollars for a specialist visit, and fifteen dollars for a physical therapy visit at the project site. The cost per patient incurred by the clinic is approximately one hundred and thirty dollars. The cost incurred that is not covered by the patient fee is covered by charitable and grant funding. The financial cost of the proposed Spanish or English curriculum, Walk with Ease, is a one-time fee of $11.95 (Arthritis Foundation, 2015). The project site has limited paid staff. Volunteers serve in the roles of providers, nurses, pharmacy techs and interpreters. The proposed budget (Appendix Q) includes materials needed for the initial implementation, however ongoing utilization of the program would result in decreased expenses going forward.

The future financial cost of materials could be sustained by payments when compared to the current payments received for the arthritis interventions offered. From a strictly financial

perspective, the small material cost may be reasonable to maintain sustainability given the alternative costs of on-going pharmaceutical, physical therapy costs, and future surgical costs. This also does not take into account the psychological burden associated with increasing pain and disability levels. By decreasing the psychological and physical burden associated with pain and disability, this intervention has potential benefits of increased productivity that expand beyond the scope of the patient and clinic system and extend into local and national systems.

Current Policy Influences

Given the widespread occurrence and cost associated with arthritis in the U. S., arthritis related policy advocacy is vital to the self-management programs. One of the major aspects of arthritis healthcare policy involves making pharmaceuticals more affordable and ultimately more accessible. This is specifically relevant in the treatment of rheumatoid arthritis which necessitates the ongoing usage of disease-modifying anti-rheumatic drugs (Tanaka, & Hirata, 2014). The Arthritis Foundation is advocating for a policy to introduce a pathway that would allow biosimilars to be marketed in the United States, ultimately allowing for pharmaceutical competition and more competitive, lower priced medication (2016). Many of the participants of the project reported difficulty with access to medication to treat rheumatoid arthritis. The clinic was limited in what medications it could offer through the pharmacy due to the high cost associated with many of the medications currently available to treat rheumatoid arthritis. An increase in self-efficacy has the potential to increase medication adherence in arthritis patients (Salt, & Frazier, 2010). However, without access to the medication needed the full benefit is not realized.

Another policy relevant in the discussion of the intervention regarding arthritis treatment, is the support of a dedicated arthritis research program at the Department of Defense

(Arthritis Foundation, 2016). This policy is introducing a budget of 20 million dollars dedicated to this establishment. This policy speaks to financial burden of arthritis on a national scale and the importance of ongoing research into prevention and treatment.

Another national policy that directly affects the population of this intervention is the introduction of the Affordable Care Act (ACA) in 2010. While beneficial to many underserved populations, the Affordable Care Act does not provide medical coverage for individuals that are uninsured, such as the population served within the project (Strutz, & Baig, 2014). This reiterates the necessity of cost-effective interventions to decrease the burden of chronic disease within this specific population.

Leadership Role

The ability to conduct this project was critically dependent upon the stakeholder's support of the project and the ability of the co-investigator to implement all aspects of the project. The personal practice of the co-investigator as a future nurse practitioner was inspired by the knowledge and conclusions of the study specifically related to practice implementation in underserved populations. The importance of facilitating self-management techniques among patients in underserved population was reinforced. Additionally, the need for greater specifics as it relates to encouraging exercise and medication education is necessary for the population. Doctorally prepared nurse practitioners are prepared to translate evidence into practice. In a study evaluating the care of patients with a diagnosis of rheumatoid arthritis, clinics utilizing nurse practitioner and physician assistant delivered arthritis care management were found to have a decrease in rheumatoid arthritis related disease activity when compared to clinics only staffed by rheumatologist (Solomon et al., 2015). These findings speak to the importance of the role of nurse practitioner in bridging the gap for accessibility quality arthritis healthcare management.

Sustainability Plan

One of the greatest barriers during the implementation of the project was the language

barrier and the need versus availability of interpreters on site and ongoing volunteer needs. In the

future, implementation of this intervention would be enhanced if the facilitator spoke the same

language as the participants. This barrier could be overcome by utilizing community health

workers as facilitators of the arthritis self-management group. Implications for future clinical

practice include initiating training to allow for peer-led arthritis self-management support groups.

The utilization of community health worker as leaders for self-management classes has been

successfully modeled within the Latino population for diabetes self-management education in

previous studies (Micikas et al., 2015; Otero-Sabogal et al., 2010; Rothschild et al., 2014).

This specific curriculum was chosen was for its adaptability in both group and self-

directed formats. Within this specific project implementation, both the group and self-directed

format could be utilized based upon whether participants chose to attend the additional group

meetings. Research based upon the curriculum utilized within the project found significantly less

pain and stiffness when utilized in the self-directed or group format (Wyatt et al., 2014).

Participants preferred going to the group format compared to the self-directed format. However

due to barriers such as transportation, other health issues, and work constraints, some participants

elected to only participate in the initial meeting. While the identification of a nurse volunteer or

community health worker to be trained would be preferable, the education may still be impactful

in a self-directed format which would require the least amount of personnel resources from the

clinic. This is another option to ensure sustainability.

Gaps and Implications for Research

Given the complexity associated with the minority population represented within the study and the varying presentation of arthritis, several gaps within research were identified during the literature review and after the implementation of the project. One of the first gaps identified in preparation for the implementation of the project was the lack of community resources available to the Latino population and more specifically the Spanish speaking community within an area of the country that has been identified to have a large Latino population.

Throughout the implementation of the project, participants reported comorbid conditions that contributed to the complexity and severity of the arthritis presentation. Comorbid conditions were not tracked or specifically identified prior to or during the intervention. Future implementation may be enhanced by allowing for more attention and identification of co-morbidities. While these reports, mirrored other studies (Osiri, & Sattayasomboon, 2013; Stang et al., 2006), further research regarding the role of comorbidities in the application and effectiveness of arthritis self-management education is needed.

Additionally, the setting for the project site has a unique organization structure within the community as a faith-based clinic. The clinic's medical providers deliver a holistic approach to medicine, caring for the both the spiritual and emotional well-beings of the patients in addition to the physical needs. While there has been a recent academic interest in the connection between emotional health and arthritis, no research regarding the role of spiritual practices such as prayer or singing had been investigated within a population with arthritis. Throughout the intervention, many of the patients reported prayer and their belief in a higher power as a source of comfort and way to cope with the pain associated with arthritis. This was identified as an area of research that could possibly be used in collaboration with this same clinical setting in the future.

Another aspect of the arthritis self-management intervention that became apparent during the implementation was the positive effect associated with family members being involved and invited to the group meetings. In the planning stage, the co-investigator had not considered the importance of supporting and possibly even encouraging family attendance to the arthritis self-management meetings. While social support is encouraged within the arthritis self-management curriculum, no research could be identified regarding the efficacy of facilitating family attendance at arthritis self-efficacy meetings.

Conclusion

Arthritis treatment in the underserved population is complex due to varying presentations, comorbidities, and limited access to treatment and medication. Arthritis self-management has been demonstrated to be a cost-effective, culturally relevant intervention to decrease pain, increase exercise, decrease associated disability, and increase self-efficacy. The potential for sustainability is promising through the utilization of a community health worker or nurse volunteer. In addition, the ability to offer self-directed education allows for greater utilization within underserved populations. With the implementation of the ACA, the resources available for the uninsured population has decreased, making cost-effective interventions critical. Doctorally prepared nurse practitioners are well equipped to facilitate an interdisciplinary approach to arthritis treatment, promote evidence based practice, and bridge the gap regarding access to care for underserved populations. Potential research topics identified during the project implementation included the role of spiritual care and arthritis pain, the role of comorbidities in arthritis treatment, and the function of family involvement within self-management education. Health policy plays a pivotal role in facilitating this and other arthritis research, in addition to expanding access to arthritis medications. In conclusion, culturally adapted arthritis self-

management education that incorporates exercise education within an underserved Latino

community serves as a promising intervention to decrease the current health disparities

associated with arthritis disability by increasing exercise and self-efficacy.

References

Allen, K., Oddone, E., Coffman, C., Datta, S., Juntilla, K., Lindquist, J., & ... Bosworth, H.

(2010). Telephone-Based Self-management of Osteoarthritis: A Randomized Trial.

Annals Of Internal Medicine, 153(9), 570-579. doi:10.1059/0003-4819-153-9-

201011020-00006

Arnold, C. M., & Faulkner, R. A. (2010). The effect of aquatic exercise and education on

lowering fall risk in older adults with hip osteoarthritis. *Journal Of Aging & Physical

Activity, 18*(3), 245-260.

Arvidsson, S., Bergman, S., Arvidsson, B., Fridlund, B., & Tingström, P. (2013). Effects of a

self-care promoting problem-based learning programme in people with rheumatic

diseases: a randomized controlled study. *Journal Of Advanced Nursing*, *69*(7), 1500-

1514. doi:10.1111/jan.12008

Arthritis Foundation. (2010). *Walk with ease: Your guide to walking for better health, improved

fitness and less pain.* Atlanta, Georgia: Arthritis Foundation.

Arthritis Foundation. (2015). *Arthritis Foundation Store*. Retrieved from

http://www.afstore.org/Products-By-Type/Productos-en-Espaol_2/CAMINE-CON-

GUSTO

Arthritis Foundation (2016). *Champion of Yes.* Retrieved from

www.arthritis.org/documents/sections/advocate

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review

of Psychology,* 52, 1-26.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior,

31(*2), 143-164 22p.

Barbour, K. E., Stevens, J. A., Helmick, C. G., Luo, Y., Murphy, L. B., Hootman, J. M., & ...

    Sugerman, D. E. (2013). Prevalence of doctor-diagnosed arthritis and arthritis-

    attributable activity limitation – United States, 2010-2012. MMWR: Morbidity &

    Mortality Weekly Report, 62(44), 869-873.

Barbour, K. E., Stevens, J. A., Helmick, C. G., Luo, Y., Murphy, L. B., Hootman, J. M., & ...

    Sugerman, D. E. (2014). Falls and fall injuries among adults with arthritis - United States,

    2012. MMWR: Morbidity & Mortality Weekly Report, 63(17), 379-383.

Baruth, M., Wilcox, S., Sharpe, P. A., Schoffman, D. E., & Becofsky, K. (2014). Baseline

    predictors of physical activity in a sample of adults with arthritis participating in a self-

    directed exercise program. *Public Health (Elsevier),* 128(9), 834-841.

    doi:10.1016/j.puhe.2014.06.018

Bhat, A., DeWalt, D., Zimmer, C., Fried, B., & Callahan, L. (2010). The role of helplessness,

    outcome expectation for exercise and literacy in predicting disability and symptoms in

    older adults with arthritis. *Patient Education & Counseling, 81(*1), 73-78.

    doi:10.1016/j.pec.2009.12.004128-135.

Brady, T., Jernick, S., Hootman, J., & Sniezek, J. (2009). Public health interventions for arthritis:

    expanding the toolbox of evidence-based interventions. *Journal Of Women's Health

    (15409996)*, *18*(12), 1905-1917. doi:10.1089/jwh.2009.1571

Butts, J. B., & Rich, K. L. (Eds.). (2011). *Philosophies and theories for advanced nursing

    practice.* Sudbury, MA: Jones & Bartlett Learning.

Carrington Reid, M., Chen E. K., Parker, S. J., Henderson, H. R., & Pillemer, K. (2014).

    Measuring the value of program adaptation: A comparative effectiveness study of the

stand and a culturally adapted version of the arthritis self-help program. *Hospital for*

   Special Surgery Journal, *10*, 59-67. doi:10.1007/s11420-013-9368-2

Centers for Disease Control and Prevention. (2011a).Prevalence of doctor-diagnosed arthritis and

   arthritis-attributable effects among Hispanic adults, by Hispanic Subgroup- United States

   2002, 2003, 2006, 2009. (2011). MMWR: Morbidity & Mortality Weekly Report, 60(6),

   167-171.

Centers for Disease Control and Prevention. (2011b). Prevalence of obesity among adults with

   arthritis --- United States, 2003--2009. MMWR: Morbidity & Mortality Weekly Report,

   60(16), 509-513.

Cheriel, C., Huget, N., Gupta, S., McClure, H., Leman, R. F., & Ngo, D. L. (2009). Arthritic pain

   among Latinos: Results from a community-based survey. *Arthritis & Rheumatism,*

   61(11), 1491-1496. doi: 10.1002/art.24831

Coleman, S. Briffa, N. K., Carroll, G., Inderjeeth, C., Cook, N., & McQuade, J. (2012). A

   randomized controlled trial of self-management education program for osteoarthritis of

   the knee delivered by health care professionals. *Arthritis Research & Therapy, 14*(1), 1-

   14. doi: 10.1186/ar3703

Eakin, E., Bull, S., Riley, K., Reeves, M., McLaughlin, P., & Gutierrez, S. (2007). Resources for

   health: a primary-care-based diet and physical activity intervention targeting urban

   Latinos with multiple chronic conditions. *Health Psychology, 26(*4), 392-400.

Fitzcharles, M., Lussier, D., & Shir, Y. (2010). Management of Chronic Arthritis Pain in the

   Elderly. *Drugs & Aging, 27*(6), 471-490.

Fransen, M., McConnell, S., Hernandez-Molina, G., Reichenbach, S. (2014).Exercise for

    osteoarthritis of the hip. *Cochrane Database of Systematic Reviews 2014*, Issue 4. Art.

    No.: CD007912. doi:10.1002/14651858.CD007912.pub2.

Gandoy-Crego, M., Clemente, M., Gómez-Cantorna, C., González-Rodríguez, R., & Reig-

    Botella, A. (2016). Self-efficacy and Health: The SEH Scale. *American Journal Of*

    Health Behavior, 40(3), 389-395 7p. doi:10.5993/AJHB.40.3.11

Goeppinger, J., Lorig, K. R., Ritter, P. L. , Mutatkar, S., Villa, F., & Gizlice, Z. (2009). Mail-

    delivered arthritis self-management tool kit: A randomized trial and longitudinal

    followup. *Arthritis & Rheumatism, 61*(7), 867-875. Doi: 10.1002/art.24587

Hoerster, K., Butler, D., Mayer, J., Finlayson, T., & Gallo, L. (2012). Use of conventional care

    and complementary/alternative medicine among US adults with arthritis. *Preventive*

    Medicine, 54(1), 13-17.

Hurkman, E. Van Der Giesen F. J., Vliet Vlieland, T. P. M., Schoones, J., Van den Ende, E. C.

    H. M. (2009). Dynamic exercise programs (aerobic capacity and/or muscle strength

    training) in patients with rheumatoid arthritis. *Cochrane Database of Systematic Reviews*

    2009, 4, CD006853. doi: 10.1002/14651858.CD006853.pub2.

Kelley, G. A., & Kelley, K. S. (2014). Effects of exercise on depressive symptoms in adults with

    arthritis and other rheumatic disease: a systematic review of meta-analyses. *BMC*

    Musculoskeletal Disorders, 15(1), 1-19. doi:10.1186/1471-2474-15-121

Knittle, K. P., Gucht, V.D., Hurkmans, E. J., Vlieland, T.V., Peeters, A. J., Ronday, H. K., &

    Maes, S. (2011). Effect of self-efficacy and physical activity goal achievement on

    arthritis pain and quality of life in patients with rheumatoid arthritis. *Arthritis Care &*

    Research, 63(11), 1613-1619. doi:10.1002/acr.20587

Laforest, S., Nour, K., Parisien, M., Poirier, M., Gignac, M., & Lankoande, H. (2008). "I'm taking charge of my arthritis": designing a targeted self-management program for frail seniors. *Physical & Occupational Therapy In Geriatrics*, 26(4), 45-66.

Lillie-Blanton, M., & Laveist, T. (1996). Race/ethnicity, the social environment, and health. *Social Science & Medicine, 43*(1), 83-91.

Lim, A., & Doherty, M. (2011). What of guidelines for osteoarthritis?. *International Journal Of Rheumatic Diseases,* 14(2):136-144.

Lineker, S. C., Bell, M. J., & Badley, E. M. (2011). Evaluation of an inter-professional educational intervention to improve the use of arthritis best practices in primary care. *Journal Of Rheumatology, 38*(5), 931-937 7p. doi:10.3899/jrheum.101007

Lopez-Class, M., & Jurkowski, J. (2010). The limits of self-management: community and health care system barriers among Latinos with diabetes. *Journal Of Human Behavior In The Social Environment, 20(6*), 808-826. doi:10.1080/10911351003765967

Lorig, K., Brown, B. W. Jr., Ung, E., Chastain, R., Shoor, S., & Holman, H. R. (1989). Development and evaluation of a scale to measure the perceived self-efficacy of people with arthritis. *Arthritis and Rheumatism, 32*(1), 37-44. Retrieved from http://patienteducation.stanford.edu/research/searthritis.html

Lorig, K., Gonzalez, V., & Ritter, P. (1999). Community-based Spanish language arthritis education program: a randomized trial. *Medical Care*, *37*(9), 957-963.

Lorig, K., Ritter, P., & Plant, K. (2005). A disease-specific self-help program compared with a generalized chronic disease self-help program for arthritis patients. *Arthritis & Rheumatism: Arthritis Care & Research*, *53*(6), 950-957.

Lorig, K. R., Sobel, D. S., Ritter, P. L., Laurent, D., & Hobbs, M. (2001). Effect of a self-

    management program on patients with chronic disease. *Effective Clinical Practice, 4,*

    256-262. Retrieved from http://patienteducation.stanford.edu/research/haq8.html

Martire, L. M., Keefe, F. J., Schulz, R., Parris Stephens, M. A., & Mogle, J. A. (2013). The

    impact of daily arthritis pain on spouse sleep. *Pain, 154(*9), 1725-1731.

Mascarenhas, B., Siegel, W., & Vaidya, S. (2013). Breaking the cycle of arthritis pain. *Rehab*

    Management, October 2013, 32-35.

Matlin, M. W. (2005). *Cognition* (6th ed.). Hoboken, NJ: Wiley.

McCabe, B. E., Plotnikoff, R. C., Dewar, D. L., Collins, C. E., & Lubans, D. R. (2015). Social

    Cognitive Mediators of Dietary Behavior Change in Adolescent Girls. *American Journal*

    Of Health Behavior, 39(1), 51-61 11p. doi:10.5993/AJHB.39.1.6

McDougall, J., & Linton, P. (2012). Neurophysiology of arthritis pain. *Current Pain &*

    Headache Reports, 16(6), 485-491. doi:10.1007/s11916-012-0300-0

McKnight, P. E., Kasle, S., Going, S., Villanueva, I., Cornett, M., Farr, J….Zautra, A. (2010). A

    comparison of strength training, self-management, and the combination for early

    osteoarthritis of the knee. *Arthritis Care & Research, 62(*1), 45-53. doi:

    10.1002/acr.200013

Mendelson, A. D., McCullough, C., & Chan, A. (2011). Integrating self-management and

    exercise for people living with arthritis. *Health Education Research*, *26*(1), 167-177.

    doi:10.1093/her/cyq077

Micikas, M., Foster, J., Weis, A., Lopez-Salm, A., Lungelow, D., Mendez, P., & Micikas, A.

    (2015). A community health worker intervention for diabetes self-management among
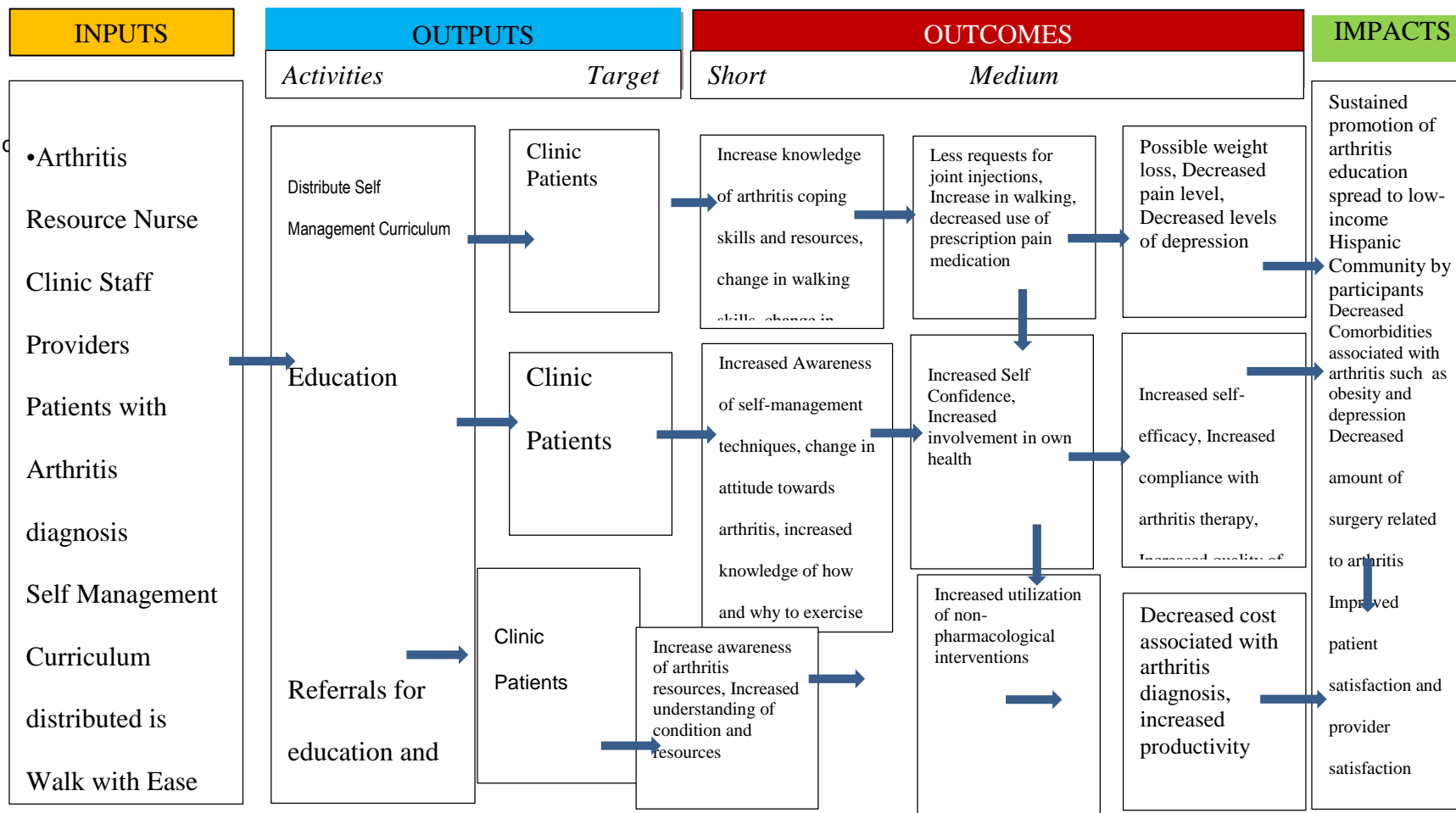
the Tz'utujil Maya of Guatemala. *Health Promotion Practice, 16*(4), 601-608 8p. doi:10.1177/1524839914557033

Ory, M. G., Smith, M. L., Ahn, S., Jiang, L., Lorig, K., Whitelaw, N. (2014). National study of chronic disease self-management: Age comparison of outcome findings. *Health Education & Behavior, 41*, 34S-42S. doi: 10.1177/1090198114543008

Osiri, M., & Sattayasomboon, Y. (2013). Prevalence and out-patient medical costs of comorbid conditions in patients with rheumatoid arthritis. *Joint Bone Spine, 80*(6), 608-612 5p. doi:10.1016/j.jbspin.2013.01.013

Otero-Sabogal, R., Arretz, D., Siebold, S., Hallen, E., Lee, R., Ketchel, A., & ... Newman, J. (2010). Physician--community health worker partnering to support diabetes self-management in primary care. *Quality In Primary Care, 18*(6), 363-372 10p.

Palmer, D., & El Miedany, Y. (2012). PROMs: a novel approach to arthritis self-management. *British Journal Of Nursing, 21(*10), 601-607.

Parker, S. J., Vasquez, R., Chen,E. K., Henderson, C. R., Pillemer, K. , Robbins, L., & Reid, M. C. (2011). A comparison of the arthritis foundation self-help program across three race/ethnicity groups. *Ethn Dis., 21*(4), 444-450.

Pérez-Escamilla, R. (2011). Acculturation, nutrition, and health disparities in Latinos. *American Journal Of Clinical Nutrition, 93*(5), 1163S-1167. doi:10.3945/ajcn.110.003467

Ritter, P. L., González, V. M. , Laurent, D. D. , & Lorig, K. R. (2006). Measurement of pain using   the visual numeric scale. *Journal of Rheumatology, 33*(3), 574-80. Retrieved from http://patienteducation.stanford.edu/research/vnspain.html

Rosswurm, M. A., & Larrabee, J. H. (1999). A model for change to evidence-based practice. *Journal of Nursing Scholarship, 31* (4), 317-322.

Rothschild, S. K., Martin, M. A., Swider, S. M., Lynas, C. T., Janssen, I., Avery, E. F., &

      Powell, L. H. (2014). Mexican American trial of community health workers: A

      randomized controlled trial of a community health worker intervention for Mexican

      Americans with type 2 diabetes mellitus. *American Journal Of Public Health, 104*(8),

      1540-1548 9p. doi:10.2105/AJPH.2013.301439

Salt, E., & Frazier, S. (2010). Adherence to disease-modifying antirheumatic drugs in patients

      with rheumatoid arthritis: a narrative review of the literature. *Orthopaedic Nursing,*

      29(4), 260-275 16p. doi:10.1097/NOR.0b013e3181e5c2c9

Solomon, D. H., Fraenkel, L., Lu, B., Brown, E., Tsao, P., Losina, E., & ... Bitton, A. (2015).

      Comparison of care provided in practices with nurse practitioners and physician

      assistants versus subspecialist physicians only: A cohort study of rheumatoid arthritis.

      Arthritis Care & Research, 67(12), 1664-1670 7p. doi:10.1002/acr.22643

Stang, P., Brandenburg, N., Lane, M., Merikangas, K., Von Korff, M., & Kessler, R. (2006).

      Mental and physical comorbid conditions and days in role among persons with arthritis.

      Psychosomatic Medicine, 68(1), 152-158 7p.

Stanford School of Medicine. (2015). *Arthritis self-management program.* Retrieved from

      http://patienteducation.stanford.edu/programs/asmp.html

Stutz, M., & Baig, A. (2014). International examples of undocumented immigration and the

      affordable care act. *Journal Of Immigrant & Minority Health, 16*(4), 765-768 4p.

      doi:10.1007/s10903-013-9790-z

Tanaka, Y., & Hirata, S. (2014). Intensive Intervention Can Lead to a Treatment Holiday from

      Biological DMARDs in Patients with Rheumatoid Arthritis. *Drugs, 74(*18), 2129-2139

      11p. doi:10.1007/s40265-014-0323-4

Vorderstrasse, A., Shaw, R. J., Blascovich, J., & Johnson, C. M. (2014). A theoretical

    framework for a virtual diabetes self-management community intervention. *Western*

    Journal Of Nursing Research, 36(9), 1222-1237. doi:10.1177/0193945913518993

Waite-Jones, J. M., Hale, C. A., & Lee, H. (2013). Psychosocial effects of Tai Chi exercise on

    people with rheumatoid arthritis. *Journal Of Clinical Nursing, 22*(21/22), 3053-3061.

    doi:10.1111/jocn.12327

Wang, M. L., Lemon, S. C., Whited, M. C., & Rosal, M. C. (2014). Who benefits from diabetes

    self-management interventions? The influence of depression in the latinos en control trial.

    Annals Of Behavioral Medicine, 48(2), 256-264. doi:10.1007/s12160-014-9606-y

Wu, S. V., Kao, M., Wu, M., Tsai, M., & Chang, W. (2010). Effects of osteoarthritis self-

    management programme. *Journal of Advanced Nursing, 67*(7), 1491-1501. doi:

    10.1111/j.1365-2648.2010.05603.x

Wyatt, B., Mingo, C. A., Waterman, M. B., White, P., Cleveland, R. J., & Callahan, L. F. (2014).

    Impact of the arthritis foundation's walk with ease program on arthritis symptoms in

    African Americans. *Preventing Chronic Disease, 11(E199),* 1-9.

    doi:10.5888/pcd11.14014

Appendix A
Self-Management Education and Arthritis Disability in the Underserved
Latino Community

Goals: The purpose of this project is to apply evidence based research regarding arthritis treatment and implement a self-management arthritis education project within an underserved Hispanic Spanish and English speaking population with the goal of reducing pain and disability associated with the diagnosis of arthritis and increasing self-efficacy.

INPUTS	OUTPUTS		OUTCOMES		IMPACTS
	Activities	*Target*	*Short*	*Medium*	

- Arthritis Resource Nurse

Clinic Staff

Providers

Patients with

Arthritis

diagnosis

Self Management

Curriculum

distributed is

Walk with Ease

Distribute Self Management Curriculum → Clinic Patients → Increase knowledge of arthritis coping skills and resources, change in walking skills, change in...

Education → Clinic Patients → Increased Awareness of self-management techniques, change in attitude towards arthritis, increased knowledge of how and why to exercise

Referrals for education and → Clinic Patients → Increase awareness of arthritis resources, Increased understanding of condition and resources

Less requests for joint injections, Increase in walking, decreased use of prescription pain medication

Increased Self Confidence, Increased involvement in own health

Increased utilization of non-pharmacological interventions

Possible weight loss, Decreased pain level, Decreased levels of depression

Increased self-efficacy, Increased compliance with arthritis therapy, Increased quality of...

Decreased cost associated with arthritis diagnosis, increased productivity

Sustained promotion of arthritis education spread to low-income Hispanic Community by participants Decreased Comorbidities associated with arthritis such as obesity and depression Decreased amount of surgery related to arthritis Improved patient satisfaction and provider satisfaction

Assumptions: That patients will either fill in and mail back the post-test or come to the clinic and fill out a post-test intervention.
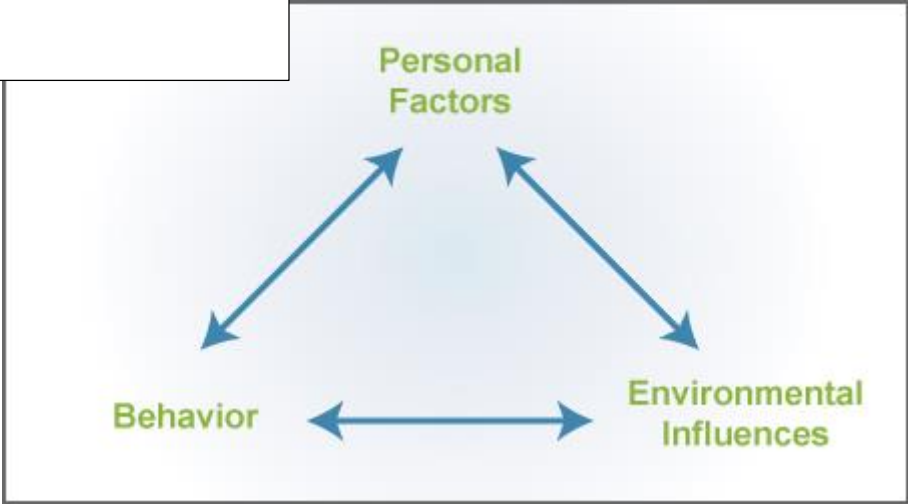
Patient will utilize and engage in the material given. Patients will learn from reading material.

Appendix B

Social Cognitive Theory

Personal Factors: Age, Arthritis
Diagnosis, Family, Culture, Previous
Experience, Previous Injury

Behavior: Self Efficacy, Knowledge,
Attitude

Personal
Factors

Behavior

Environmental
Influences

Environmental Influences: Place of living,
Resources, Shoes, Socks, Medications, transportation

Appendix C

Table 1

Evidence Table

Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Decision for Use in Practice/ Application to Practice
Wu, S. V. (2010) Effects of osteoarthritis self-management programme. Journal of Advanced Nursing, 67(7), 1491-1501. doi:10.1111/j.1365 2648.2010.05603. x Country: Taiwan	Bandura's concept of self-efficacy and behavior change, self-efficacy theory	**Design**: A quasi-experimental study LOE:III **Purpose**: develop a self-management programme for older community residents and to evaluate the outcomes, which involved self-efficacy, pain beliefs and other arthritis-related information. **Inclusion Criteria**: 50 years of age or older with physician-diagnosed knee DOA, suffer from morning stiffness that is relieved within 30 minutes, have crepitus with active motion, and show bony	N=259 N, C=215 n, IG, NP=15 n, IG, C= 110 n, CX, NP=23 n, CX, C=91 N, C, FG=70% age range (50-80y/o) CG= 24% HL=43% TM=29%	IV1 : CX CX normal routine care IV2 : IG IG: 4 wk Taipei Osteoarthritis Program DV1:SE DV2:PB DV3:HCU	Data gathered by face-to face interview with researchers DV1: The Arthritis Self-Efficacy Scale as developed by Lorig consists of 6 questions, Pain self-efficacy scale consists of 5 questions, utilizes visual analogue scale DV2: The survey of Pain Attitudes, utilizes visual analogue scale DV3: 3 questions designed by author including numbers of unplanned medical consultation pain	Statistical Package for Social Sciences version 17.0 utilized -Descriptive Statistics -Normality of outcome data examined by Kolmogorov-smirnov test -Level of significance of the statistic tests was p<0.05 two tailed -Friedman test used to compare the outcomes measures over the three time points within each group -The between-group mean changes for the outcome measures were compared	94.1% attrition rate of IG, 88% attrition rate of CG - No statistical significant difference between CG and IG at BL -changes in BP scores statistically significant during all 3 measurements -both IG and CG PB scores improved by BL to finish by there was a significant differences between the BL to completion pain days was found when comparing CG and IG changes	Strengths: 259 PAR, Inclusion criteria, theory stated within research article, validity and reliability of measurement verified by a panel of 5 experts in musculoskeletal field, high attrition rate Weakness: 8 week follow up only, HCU has no established reliability and validity, lower LOE, lack of blindness of PAR Feasibility: 4 week program, 8 week follow up, 80 minute classes once per week

   AA – African American, AM – age mean, ARS – arthritis related symptoms, ASM – arthritis self management class, AU – aspirin usage, BL- baseline, BMI – body mass index, C – completed program, CAP- culturally adapted program, CCST- cognitive coping skills training , CG – college graduate, CS – communication skills, CU- corticosteroid usage, CX – control group, , D – diagnosis, DE – depression score DF – diagnosed with fibromyalgia, DI – disability, DO - diagnosed with other, DOA – diagnosed with osteoarthritis, DRA – diagnosed with rheumatoid arthritis, DV – dependent variable, E – education, EL – exercise level, EN – English, END – endurance, ER – emergency room, EX – exercise, F- fatigue, FB – feedback, FG – female gender, G – gender, GSF- generic chronic disease self-management class H - Hispanic HCU – health care utilization HG – high school graduate, HL – high school education or less, HO – hospitalizations, hr – hour , IG – intervention group, ISU- immunosuppressant usage, IV1- independent variable, L- language (English or Spanish), LOE – level of evidence, LS – living situation, M – mobility, MG – male gender, mon- month, MO – mood score, mons – months, MS – marital status, MU-medication usage n – sample size (studies), N – sample size (people), NCAP – non culturally adapted program, NP - non-completed program, NR - not reported, NU- NSAIDS usage, PAR - participants PB – pain beliefs, PBL – Problem Based Learning Program, PL – pain level, PET – pre test, POT – post-test, PS – problem solving, R – race, RA – role activities, RE – relaxation ROM- range of motion QOL – quality of life, S – strength SC-some college, SE – self efficacy, SEC – self care SP - Spanish SRH-self- rated health, ST – stretching, TM- took pain relief medication, TUG – timed up & get test, V – vocation, VAS – visual analogue scale, W – white ethnicity, wks – weeks, yr - year↓ - decrease, ↑ - increase

Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Decision for Use in Practice/ Application to Practice
			tenderness or enlargement without joint warmth **Exclusion Criteria:** knee replacement surgery, a risk of falling such that they were unable maintain balance while standing independently and any medication condition that could be exacerbated by the protocol such as heart disease		days, and disability days	using the Mann-Whitney U-t		applicability: 10-15 people in each group, groups lead by healthcare worker, used self efficacy scale, PAR low level of schooling
Geoppinger, J. (2009). Mail-delivered arthritis self-management tool kit: A randomized trial and longitudinal followup. *Arthritis & Rheumatism, 61*(7), 867-875. Doi:10.1002/art.24 587 Country: US Funding: Center for Disease Control and Prevention	Health belief model, cognitive behavior theory	**Design:** randomized control design with longitudinal follow up LOE:II **Purpose:** replicate previous effectiveness findings and establish clinical significance and extend the reach of arthritis self-management education through	N= 921 N, CX=463 CX= delayed receiving mailed ASM by 4 mons N, IG= 458 IG=mailed ASM curriculum N, CX, C, 4mon =414 N, IG, C, 4 mon=359 N C, 9 mon=648 DOA=546 DRA=238 DF=441 DO=120	Level 1 variables: IV1:ASMC, IG IV2:CX DV1:PL DV2:RA DV3:HCU DV4:SRH DV5:DE DV6:DI DV7:SE DV8:EX Level 2 variables: IV1:age IV2:MS IV3:R IV4 :E	IG: mailed ASM curriculum included self-test, information sheets, arthritis help book, audio RE and EX cd, audio cd of printed material DV1: visual numeric scale to measure PL DV2: The Activities Limitation scale DV3:4 measures, self- reported	-Use of Descriptive Statistics -Use of T test to compare BL demographic and outcome variables at 4 mons and 9mons -ANCOVA analysis -sample of EN and SP analyzed together and separately -Chi Square tests computed	-70% attrition rate for those who completed 9 month questionnaires -no significant differences in any of the demographic variables between CG and IG -EX, ST, communication with dr, and SE improved statistically significant and	Strengths: intervention in both SP and EN, 19 state departments recruited PAR, inclusion criteria, no significant differences in demographic variables CG and IG Weakness: Conceptual framework NR, study participants

AA – African American, **AM** – age mean, **ARS** – arthritis related symptoms, **ASM** – arthritis self management class, **AU** – aspirin usage, **BL**- baseline, **BMI** – body mass index, **C** – completed program, **CAP-** culturally adapted program, **CCST**- cognitive coping skills training , **CG** – college graduate, **CS** – communication skills, **CU-** corticosteroid usage, **CX** – control group, **, D** – diagnosis, **DE** – depression score **DF** – diagnosed with fibromyalgia, **DI** – disability, **DO -** diagnosed with other, **DOA** – diagnosed with osteoarthritis, **DRA** – diagnosed with rheumatoid arthritis, **DV** – dependent variable, **E** – education, **EL** – exercise level, **EN** – English, **END** – endurance, **ER** – emergency room, **EX** – exercise, **F-** fatigue, **FB** – feedback, **FG** – female gender, **G** – gender, **GSF-** generic chronic disease self-management class **H -** Hispanic **HCU** – health care utilization **HG** – high school graduate, **HL** – high school education or less, **HO** – hospitalizations, **hr** – hour , **IG** – intervention group, **ISU**- immunosuppressant usage, **IV1**- independent variable, **L**- language (English or Spanish), **LOE** – level of evidence, **LS** – living situation, **M** – mobility, **MG** – male gender, mon- month, **MO** – mood score**, mons** – months, **MS** – marital status, **MU**-medication usage **n** – sample size (studies), **N** – sample size (people), **NCAP** – non culturally adapted program, **NP** - non-completed program, **NR** - not reported, **NU**- NSAIDS usage, **PAR** - participants **PB** – pain beliefs, **PBL** – Problem Based Learning Program, **PL** – pain level, **PET** – pre test, **POT** – post-test, **PS** – problem solving, **R** – race, **RA** – role activities, **RE** – relaxation **ROM**- range of motion **QOL** – quality of life, **S** – strength **SC**-some college, **SE** – self efficacy, **SEC** – self care **SP** - Spanish **SRH**-self- rated health, **ST** – stretching, **TM**- took pain relief medication, **TUG** – timed up & go test, **V** – vocation, **VAS** – visual analogue scale, **W** – white ethnicity, **wks** – weeks, **yr -** year↓ - decrease, ↑ - increase

Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Decision for Use in Practice/ Application to Practice
		a mail delivered kit available in Spanish and English	CX, MG=13.8% IG, MG=15.4% IG, AA= 17.2% CX, AA=16.6 IG, H = 36.7% CX, H = 38% IG, W= 43.7% CX, W=43.6% CX, AM = 53.8 y/o IG, AM = 54.4 y/o Inclusion Criteria: age 18 y/o and above, self-reported physician diagnosis of osteoarthritis, rheumatoid arthritis, or fibromyalgia, or the presence of chronic joint symptoms as determined by CDC criteria, ability to complete questionnaires Exclusion Criteria: no prior participation in the small-group self management program	IV5:L DV1:length of study	outpatient visits to physicians, ER, HO, and # of nights in HO DV4: The Health Distress Scale adapted from Medical Outcomes Study, and DV5: Patient Health Questionnaire, a 9 item self-screen DV6:8 item version of Health Assessment Questionnaire, based on National Health Survey DV7: short 8 item scale built on earlier model has Cronbach's alpha of 0.94 DV8:ST, EX, use of technique to improve communication With dr.	-Cronbach's alphas computed and compared with previous results	continued to improve at 9 mons evaluation - no statistically significant changes in HCU -DI↓ P<0.001 -F↓ p<0.001 -PL↓ p<0.0001	enrolled with low level of symptom severity decreasing amount for improvement, no exclusion criteria, Dr. Lorig, one of the authors receives royalties for use of the Arthritis Tool Kit used for the IG Applicability: SP option, 81% of PAR had arthritis diagnosis Feasibility: does not require group leader or transportation to group sessions, useful for group with limited financial meals

AA – African American, AM – age mean, ARS – arthritis related symptoms, ASM – arthritis self management class, AU – aspirin usage, BL- baseline, BMI – body mass index, C – completed program, CAP- culturally adapted program, CCST- cognitive coping skills training , CG – college graduate, CS – communication skills, CU- corticosteroid usage, CX – control group, , D – diagnosis, DE – depression score DF – diagnosed with fibromyalgia, DI – disability, DO - diagnosed with other, DOA – diagnosed with osteoarthritis, DRA – diagnosed with rheumatoid arthritis, DV – dependent variable, E – education, EL – exercise level, EN – English, END – endurance, ER – emergency room, EX – exercise, F- fatigue, FB – feedback, FG – female gender, G – gender, GSF- generic chronic disease self-management class H - Hispanic HCU – health care utilization HG – high school graduate, HL – high school education or less, HO – hospitalizations, hr – hour , IG – intervention group, ISU- immunosuppressant usage, IV1- independent variable, L- language (English or Spanish), LOE – level of evidence, LS – living situation, M – mobility, MG – male gender, mon- month, MO – mood score, mons – months, MS – marital status, MU-medication usage n – sample size (studies), N – sample size (people), NCAP – non culturally adapted program, NP - non-completed program, NR - not reported, NU- NSAIDS usage, PAR - participants PB – pain beliefs, PBL – Problem Based Learning Program, PL – pain level, PET – pre test, POT – post-test, PS – problem solving, R – race, RA – role activities, RE – relaxation ROM- range of motion QOL – quality of life, S – strength SC-some college, SE – self efficacy, SEC – self care SP - Spanish SRH- self- rated health, ST – stretching, TM- took pain relief medication, TUG – timed up & go test, V – vocation, VAS – visual analogue scale, W – white ethnicity, wks – weeks, yr - year↓ - decrease, ↑ - increase

Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Decision for Use in Practice/ Application to Practice
Parker, S. (2011). A comparison of the arthritis foundation self-help program across three race/ethnicity groups. *Ethn Dis., 21*(4), 444-450. Country: US	Cognitive Behavior Theory, Health Belief Model	**Design**: Quasi experimental longitudinal design with qualitative aspects LOE:III **Purpose**: facility adoption of the Arthritis Foundation Self Help Program in diverse cultural settings	N=112 N, C=94 N,C, FG=83% N, C,HL=51% N, C, SC=49% N, C, DOA=50% N, C, W =27 N, C, AA= 29 N, C, H=34 **Inclusion Criteria:** age 60y/o and above, have a self-identified pain disorder, be fluent in Spanish or English **Exclusion Criteria**: Inability to attend classes	Level 1 variables IV1-ASM DV1-HCS DV2-PL DV3- EL DV4 - MO Level 2 variables: IV1:age IV2: G IV3:R IV4:E DV5:D	IV1:Arthritis Foundation Self Help Program DV1:Arthritis Foundation Pre-course and post-course assessment, 37 items DV2:# of days in pain over 2 wks, pain intensity scale 1-10 DV3:how many days practicing END, S, RE in wk (0-7 scale) DV4:mood change in the past two weeks scale 1-5, level of tension in past 30 days 0-20 scale DV5:Arthritis Foundation Pre-course and post course assessment	- Descriptive Statistics were calculated for all variables -linear mixed model that included fixed classification for race status and time	-Attrition rate of 76% (attending 5 of the 6 classes) -focus on cultural adaptation -significant ↓ in PL by all ethnicities -significant ↑ in PB confidence among H p=0.003 -significant ↓ in ARS among H, p=0.02 -6 weekly courses lasting 2 hours, 15 participants per class -modules include CCST, R, CS, PS, E. -SP and E classes -Instructors certified by Arthritis Foundation - PAR compensated 70 dollars - post evaluation by phone call -PAR given EX CD, and R CD, and E book	Strengths: 3 study sites, emphasis on diverse community settings, high attrition rate, SP classes, H group demonstrated greatest number of positive outcomes, Weakness: inclusion criteria/ exclusion criteria, participants compensated for time, no control condition, No theory identified within article Applicablity: Low income, H population, ↓ PL, PB, ARS Feasability: 15 person group, 6 weeks, set curriculum
Carrington Reid, M. (2014).	Community-based participatory	**Design:** Comparative	N=201 NP=25	Level 1 variables: IV1:IG, ASM	DV1:PL measured by 0-10 scale, and	-General linear mixed model	-Minority populations	Strengths: Large size, 18 groups,

AA – African American, AM – age mean, ARS – arthritis related symptoms, ASM – arthritis self management class, AU – aspirin usage, BL- baseline, BMI – body mass index, C – completed program, CAP- culturally adapted program, CCST- cognitive coping skills training , CG – college graduate, CS – communication skills, CU- corticosteroid usage, CX – control group, , D – diagnosis, DE – depression score DF – diagnosed with fibromyalgia, DI – disability, DO - diagnosed with other, DOA – diagnosed with osteoarthritis, DRA – diagnosed with rheumatoid arthritis, DV – dependent variable, E – education, EL – exercise level, EN – English, END – endurance, ER – emergency room, EX – exercise, F- fatigue, FB – feedback, FG – female gender, G – gender, GSF- generic chronic disease self-management class H - Hispanic HCU – health care utilization HG – high school graduate, HL – high school education or less, HO – hospitalizations, hr – hour , IG – intervention group, ISU- immunosuppressant usage, IV1- independent variable, L- language (English or Spanish), LOE – level of evidence, LS – living situation, M – mobility, MG – male gender, mon- month, MO – mood score, mons – months, MS – marital status, MU-medication usage n – sample size (studies), N – sample size (people), NCAP – non culturally adapted program, NP - non-completed program, NR - not reported, NU- NSAIDS usage, PAR - participants PB – pain beliefs, PBL – Problem Based Learning Program, PL – pain level, PET – pre test, POT – post-test, PS – problem solving, R – race, RA – role activities, RE – relaxation ROM- range of motion QOL – quality of life, S – strength SC-some college, SE – self efficacy, SEC – self care SP - Spanish SRH- self- rated health, ST – stretching, TM- took pain relief medication, TUG – timed up & go test, V – vocation, VAS – visual analogue scale, W – white ethnicity, wks – weeks, yr - year↓ - decrease, ↑ - increase

Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Decision for Use in Practice/ Application to Practice
Measuring the value of program adaptation: A comparative effectiveness study of the stand and a culturally adapted version of the arthritis self-help program. *Hospital for Special Surgery Journal*, *10*, 59-67. doi:10.1007/s11420-013-9368-2 Country: US Funding: National institute of Nursing Research, National Institute of Aging: An Edward R. Roybal Center Grant	research, Model for Program Adaptation through Community Engagement	Effectiveness Blinded Study, LOE III **Purpose:** To test the hypotheses that adapting Arthritis Self-Help Program through active collaboration with key stakeholders would improve program attendance, retention, and adherence to self-management exercises while maintaining the program's beneficial effects **Method:**6 weekly classes, lasting 2 hrs, collected fb applied to CAP, classes held in SP and EN, 18 classes held	IG=105 IG=CAP CX=96 CX=NCAP N, C=148 N, CX, FG=77.1% N, IG, FG=81.4% N, CX,DOA=44.8% N, IG, DOA=54.2% Inclusion criteria: had to be 60 y/o or older, have a self-identified arthritis or arthritis-related disorder, be fluent in Spanish or English Exclusion Criteria: none listed	IV2: CX IV3:L DV1:PL DV2: MO DV3: EL DV4: DI DV5:SE Level 2 variables: IV1: age IV2: G IV3: R IV4: E IV5:LS	# of days in pain for 2 wks DV2: mood change in past 2 weeks on scale 1-5, level of tension in past 30 days, 1-20 scale DV3: amount of days/ wk exercising before, during and after DV4:current pain related disability 0-24 scale, current health limitation score 0-16 DV5: confidence to self-manage pain/arthritis symptoms, 0-40 scale, confidence to complete activities of daily living despite pain 0-60 scale	-$P<0.05$ significant -Descriptive Statistics	targeted within study -Attrition greatest in CAP, drop outs 7% CAP versus 26% NCAP $p<0.01$ -significant reductions in pain intensity and adapted groups, change score=-1.41 NCAP, -1.31 CAP, both $p<0.01$, -significant reduction in MO/DE, CAP -0.41, $p<0.05$ -largest change seen in Hispanic ethnic group when compared to other ethnic groups	multiple study sites, Appropriate inclusion/exclusion criteria, appropriate statistical analysis, model identified by authors of study, low attrition rate. Limitations: Reliability and validity NR; no control group for no intervention, instead comparing two similar interventions; cultural focus; Applicability: low income Spanish speaking population, ↓PL, DE, MO Feasibility: 15 person group, need trainers, 6 week time commitment for intervention
Coleman, S. (2012). Coleman, S. Briffa, N. K., Carroll, G., Inderjeeth, C., Cook, N., &	Social Cognitive Theory	**Design:** Longitudinal Randomised Controlled, repeated-measures study with	N=146 N, FG-109 N, MG-37 N, AM=65 N, IG=71 N, CX=75	IV1:IG IG: disease specific, ASM IV2:CX CX: delayed start DV1:PL	IVI: ASM for knee osteoarthritis lead by health professionals, 6 wk sessions for	-Descriptive statistics used -SPSS software utilized -differences measured at	-85% attrition in CG, 95% attrition in IG All PAR included in analysis	Strength: Inclusion/Exclusion criteria, appropriate statistical analysis, strong LOE,

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McQuade, J. (2012). A randomized controlled trial of self-management education program for osteoarthritis of the knee delivered by health care professionals. Arthritis Research & Therapy, 14(1), 1-14. doi: 10.1186/ar3703 Country: Australia		convenience sampling LOE:II **Purpose:** to determine whether a disease-specific self-management program for primary care patients with osteoarthritis of the knee implemented by health care professionals would achieve and maintain clinically meaningful improvements in health-related outcomes compared with a control group.	N, IG 6mon=68 N, CX 6 mon=68 **Inclusion Criteria**: English Speaking, Age 18 or older, DOA, referral from general practitioner or specialist, able to meet program requirements **Exclusion Criteria:** Coexisting inflammatory arthritis, serious co-morbidity, knee replacement scheduled in less than 6 mon, cannot meet program time points	DV2:M DV3:ROM	2.5 hrs each, 12 PAR in each group DVI: VAS pain scale assessed weekly DV2:modified TUG test DV3: ROM of knee joint using long armed goniometer, measured three times with best 2 scores averaged	baseline, 8 wks, and 6mos -Pearson's λ^2 test utilized -p value significant at <0.05	attended at least 4 of the 6 classes -Improvement from baseline to 8 wks in physical function, PL, vitality and social function when compared with the CG, these differences were maintained at 6 mos -significant improvement in M -improved PL in IG	Limitations: Relatively small sample size, control group had some improvement despite no intervention, reliability and validity NR, highest socioeconomic group over-represented in study, no cost analysis performed Applicability: healthcare provider instructed, ASM, 6 wks intervention Feasibility: 1 healthcare worker, 6 weeks with 2.5 hrs class, Mailed questionnaires, group size 12-15 PAR
Lorig, K.(1999). Community-based Spanish language arthritis education program: a randomized trial.	Social cognitive theory	**Design:** Longitudinal Randomized Study LOE:II **Purpose**: to determine 4-month and 1-year health-	N=331 age (18-95y/o) N, 12mos=198 N, 12 mos, C=73% N, C=86% N, IG, DRA=6.3%	Level 1variables: IV1:IG IV2:CX DV1:EL DV2: DI DV3:SE DV4:PL	IV1: 6 wkly classes, 2 hour sessions, lay-led, community ASM in SP DV1: BL questionnaire by	-Descriptive Statistics -Paired t test -regression analyses performed to determine the	-331 subjects were randomized, with attrition of 86% both IG and CG completed 4 month data	Strengths: LOE II, 331 subjects, longitudinal study, Lay led program, SP, inclusion and exclusion criteria, positive outcomes

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Medical Care, *37*(9), 957-963. Country: US Funding: NINR grant number 5		related outcomes of a 6-week, lay-led, and community based arthritis self-management program for Spanish speaking participants and to determine the role of self-efficacy in predicting health status for this population.	N, CX, DRA= 9.6% N, CX, DOA= 45.4% CX=group delayed doing program N, IG, DOA=53.2% IG=ASM N, IG, DO=4.6% N, CX, DO=6.7% N, CX, FG=81% N, IG, FG=85% N, IG, AU=59% N, IG, NU=53% N, IG, CU=6% N, IG, ISU=2% **Inclusion Criteria:** Spanish Speaking, able to fill out questionnaire, attends class, has access to phone and male **Exclusion criteria:** Non-Spanish Speaking, unable to participate in classes	DV5:SRH Level 2 variables: IV1:Age IV2:G IV3:E IV4: BL, PS IV5: BL, SE	mail and telephone, physical activity scale, minutes per week on EX, DV2:Health Assessment Questionnaire disability scale DV3:eight-question modification of arthritis self-efficacy scale DV4: visual numeric scale for pain DV5-The Center for Epidemiologic Studies Depression Scale	effects of demographic variables, behavioral variables and SE	-191 subjects identified to be followed for 1 year, 73% attrition -ROM ↑ 53% in IG -DI ↓$p<0.05$ in IG -SE↑ $p<0.05$ in IG -PL↓ in IG -positive outcomes remained at 1 year for ROM, EX, DE, SE	remained at 1 year evaluation for ROM, EX, DE, SE, evaluated MU at BL Weakness: slight ↑ in PL at 1 year eval, questionnaires not standardized were completed by phone or mail, framework NR, 36% of each group had an undiagnosed musculoskeletal symptom rather than diagnosis of arthritis Applicability: SP, community based, 6 wks, 2 hr classes Feasibility: Lay lead program, standardized protocol for class, class size 10-15, include PAR friends and family,
Allen, K. D. (2010). Telephone-based self-management	Social Cognitive Theory	**Design:** Randomized Control Trial LOE:II	N=515 C, N=461 **Inclusion**	IV1:IG IG:osteoarthritis ASM	IG: ASM focused on key health behavior of SE, knowledge,	-Descriptive Statistics used	-90% attrition rate -At 12 mons PL was less in IG than in CG but not	Strengths: PAR, size, framework reported in article,

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of osteoarthritis. Annals of Internal Medicine, 153 (9),570-579. Location: US Funding: VA Health Services Research and Development Service		**Purpose:** Examine the effectiveness of a 1-year telephone-based, self-management support intervention for patients with hip and knee osteoarthritis who were recruited from a primary care setting	**Criteria:** Enrolled in primary care at Durham VAMC, had a physician diagnosis of hip or knee osteoarthritis, had persistent, current, self-reported joint symptoms **Exclusion Criteria**: other rhuematological conditions, psychoses, dementia, other serious health conditions that would probably prevent participation in the study, being on a waiting list for arthroplasty, or participation in another osteoarthritis related or lifestyle intervention study	IV2: health education CG IV3:usual care CG DV1: PL DV2: M DV3: SE Level 2variables: IV1: age IV2:R IV3:G IV4:E IV5:BMI	outcome expectations, health goals, and perceived facilitators and barriers, written and audio versions of material, call monthly for 12 mons DV1: pain visual analog scale DV2: AIMS2 physical function subscale with 28 items, measured on 5-point Likert scale DV3: The Arthritis Self-Efficacy Scale, Likert scale from 1-10	-SAS software used to compute statistics -fit linear mixed models by using an intention to treat approach -compound symmetry covariance -Stratification variable for R	statistically significant -IG had greater improvement in SE than CG p<0.043	intervention costs reported Weakness: Conducted at 1 Affairs Medical Center, PAR reimburse $30 for BL and follow up assessments Applicability: low cost intervention, Used telephones, ASM, PL Feasibility: Telephone use, relatively low cost intervention,
Lorig, K., Ritter, P. L. , & Plant, K. (2005). A disease-specific self-help program compared with a generalized chronic disease	The Chronic Care Model, Social Cognitive Theory	**Design:** Longitudinal randomized comparative trial LOE:II **Purpose:** Both the Arthritis Self-	N=374 N, IG= 239 N, CX=116 N, NP, IG=12 N, NP, CX=7 N, IG, ROA=85.7%	IV1:IG IG:ASM IV2: CX CX: GSF IV3: 4 mos, 12 mos DV1: DI	DV1: Health Assessment Instrument DV2: Visual Numeric Pain DV3:Self-Reported	-descriptive statistics utilized -2 tailed test -comparisons of baseline scores for 2 interventions using t-test	- no significant difference in demographic variables between CG and IG -significant improvements	Strengths: strengthens importance of disease specific program, inclusion criteria, 355 PAR, investigators

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self-help program for arthritis patients. *Arthritis & Rheumatism: Arthritis Care & Research*, 53(6), 950-957. Location: US		Management Program and the generic Chronic Disease Self-Management Program have been shown to be successful in improving conditions in patients with arthritis. This study compared the relative effectiveness of the 2 programs for individuals with arthritis.	N, CX, ROA = 75.1% N, IG, DRA=18% N, CX, DRA =13% N, IG, DO=10.5% N, CX, DO=19.8% N, CX, CO=75.4% N, IG, CO=65.7% N, IG, W=86.9% N, CX, W=92.4% N, IG, FG= 81.3% N, CX, FG=77.8% **Inclusion Criteria**: a diagnosis of an rheumatic condition supplied by their physician, at least 18 years of age **Exclusion Criteria**: previous participation in a self-management course	DV2: PL DV3: EL DV4: F DV5: HCU DV6: SE	Exercises measures minutes per wk of aerobic EX, minutes per wk stretching and strength EX DV4: Visual Numeric Fatigue DV% DV5: Physician Visits, Self-reported # of times visited Dr. in 4 mos and Hospitalizations, # of times hospitalized in 4 mos DV6: SE for managing Chronic Disease, 5 items	-2 interventions compared using ANCOVAS -SAS computer program utilized for analysis -significance at $p<0.05$	from BL for those in IG measured at 4 mos in M, F, PL, EX, and SE -at 1 yr the IG had significant decrease in F compared to CG	blinded to intervention group, data collected at baseline, 4 mons, 12 mons, strong statistical analysis and design Weakness: 128 PAR without arthritis were recruited additionally, date of publishing not in last 7 years Feasibility: 6 wks, 2 hrs class, 10-15 PAR per group, peer leaders Applicability: shows strength in specific ASM rather than GSF, held in community location such as senior centers and churches
Arvidsson, S., (2013). Effects of a self-care promoting problem-based learning programme in	Health Belief Model, Problem Based Learning, Social Cognitive Theory	**Design:** Longitudinal Randomized Control Study LOE:II	N= 202 IG=1 yr, PBL promoting self-care CG=standard care on rheumatology unit	IV1:IG IV2: CX IV3: 12 mos, 18 mos DV1: QOL DV2: SEC DV3: PL	IG= 7 group of 7-8 participants with 1 tutor that met 10 times for 1.5 hours over 1 yr DV1:Short Form-36 Health Survey	-descriptive statistics utilized -power cacuation based on values of the SF-36 vitality scale from another study	-75% attrition rate in IG, lower attrition rate most likely due to length of IG -statistically significant	Strengths: Design, 1 yr longitudinal design, Inclusion Criteria, strong statistical analysis, validity of

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people with rheumatic diseases: a randomized controlled study. *Journal Of Advanced Nursing*, *69*(7), 1500-1514. doi:10.1111/jan.12 008 Country: Sweden Funding: Swedish Rheumatism Association, Region Halland, South Regial Health Care Committee, Stig Thunes Foundation Fund for Health Care Research, Norrbacka-Eugenia Foundation, Association of Rheumatology Nurses in Sweden, and Spenshult Hospital for Rheumatic Diseases		**Purpose:** The aim of the study was to evaluate the effects of a self-care promoting Problem Based Learning programme for people with rheumatic disease in terms of health related quality of life, empowerment, and self care.	N, IG=54 N, IG, NP=3 N, CX=148 N, CX, NP=17 12mos, IG, C=38 12mos, CX, C=131 18mos, IG, C=38 18mos, CX, C=124 **Inclusion Criteria**: Participants had one or more diagnoses of rheumatic disease for more than a year, had musculoskeletal pain, sleep disturbances, and or fatigue during the last 3 months, and spoke and understood Swedish, and expressed interest in being in the study **Exclusion Criteria:** Not completing the program	DV4: F DV5: SE	in the Swedish standard edition with 8 scales DV2: Appraisal of SEC Agency scale, range of 24-120 points, with higher score =better SEC DV3:visual analogue scale DV4:visual analogue scale DV5:Swedish Rheumatic Disease Empowerment Scale, 5 point Likert scale utilized	-A significance level of 5% -Assumption that minimum difference between groups was 10 points and the maximum standard deviation was 20 points -SPSS program utilized for statistical analysis - Pearson chi-square test used to compare characteristics of PAR and comparison between IG and CG -Paired sample t-test used to measure the differences in groups at different times -parametric tests and non-parametric test both used -Mann-Whitney U-test used -Wilcoxon signed ranks test used	differences in SE between IG and CG -↓F in IG -other factors measured were not statistically significant changes between IG and CG. Authors believe this may be related to the elongated year process of classes.	instruments of measure tested Weakness: PAR spoke Swedish, NR conceptual foundation Applicability: PBL program, small group lead by nurse as tutor Feasibility: 1 year timeline is unlikely, goal setting was emphasized in curriculum, nurses used as tutors

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						-p<0.05 considered statistically signficant		
McKnight, P. E. (2010). A comparison of strength training, self-management, and the combination for early osteoarthritis of the knee. *Arthritis Care & Research, 62(1),* 45-53. doi:10.1002/acr.20 0013 Country: US Funding: National Institute of Arthritis and Musculoskeletal and Skin Diseases	Health Belief Model	**Design:** 24 month unblinded randomized intervention trial to compare the effects of 3 interventions LOE:III **Purpose:** To assess the relative effectiveness of combining self-management and strength training for improving functional outcomes in patients with early knee osteoarthritis	N=273 N,C=201 N, IG1=91 N, IGI, NP=7 N, IG2= 87 N, IG2, NP=8 N, IG3= 95 N, IG3, NP=4 N, IG1, FG=80.2% N, IG1, W=92.6% N, IG1, CG=74.1% N, IG2, FG=74.7% N, IG2, W=96.3% N, IG2, CG=55.9% N, IG3, FG=76% N, IG3, W=86.3% N, IG3, CG=59.1% **Inclusion Criteria:** between the ages of 35-54y/o, reported pain on most days in one or both knees, duration of symptoms of less	IV1: IG1 IG1:ASM IV2: IG2 IG2:E IV3: IG3 IG3:combine IG1 and IG2 intervention DV1:EL DV2: M DV3:PL DV4: DI DV5:S	IV1: 2-phase ASM, 12 wkly 90 min ASM facilitated by local health professionals, wkly phone calls DV1: metrics of performance to complete, force, # of repetitions for leg press, Functional ROM, timed test subjects moved 18 pegs from one position to another , DV2: Stair climbing, 5 steps for 3 trials, get up and go test, rising from seated position and then sitting back down DV3: visual analog scale, range 0-100, the body pain subscale from the short Form 36, and the pain subscale from the	-Descriptive Statistics Utilized -alpha level set at 0.05 among groups -hypothesis test 2 sided -linear mixed-effects regression models using lmer procedure in R statistical package -Hochberg and Bejamini method utilized	-Attrition rate of 73.6% over 2 yrs -highest attrition rate among ASM IG, -all interventions resulted in improvements	Strengths: Inclusion Criteria, longitudinal study, measured at 0 mos, 9mos, and 24 mos, ASM compared to E Weakness: many PAR healthy prior to study, Conceptual framework NR, no control group with no IG Applicability: ASM is just as effective as E or ASM and E combined Feasability: Facilitated by health care professional, ASM

AA – African American, **AM** – age mean, **ARS** – arthritis related symptoms, **ASM** – arthritis self management class, **AU** – aspirin usage, **BL**- baseline, **BMI** – body mass index, **C** – completed program, **CAP-** culturally adapted program, **CCST**- cognitive coping skills training , **CG** – college graduate, **CS** – communication skills, **CU**- corticosteroid usage, **CX** – control group, **, D** – diagnosis, **DE** – depression score **DF** – diagnosed with fibromyalgia, **DI** – disability, **DO -** diagnosed with other, **DOA** – diagnosed with osteoarthritis, **DRA** – diagnosed with rheumatoid arthritis, **DV** – dependent variable, **E** – education, **EL** – exercise level, **EN** – English, **END** – endurance, **ER** – emergency room, **EX** – exercise, **F**- fatigue, **FB** – feedback, **FG** – female gender, **G** – gender, **GSF**- generic chronic disease self-management class **H -** Hispanic **HCU** – health care utilization **HG** – high school graduate, **HL** – high school education or less, **HO** – hospitalizations, **hr** – hour , **IG** – intervention group, **ISU**- immunosuppressant usage, **IV1**- independent variable, **L**- language (English or Spanish), **LOE** – level of evidence, **LS** – living situation, **M** – mobility, **MG** – male gender, mon- month, **MO** – mood score, **mons** – months, **MS** – marital status, **MU**-medication usage **n** – sample size (studies), **N** – sample size (people), **NCAP** – non culturally adapted program, **NP** - non-completed program, **NR** - not reported, **NU**- NSAIDS usage, **PAR** - participants **PB** – pain beliefs, **PBL** – Problem Based Learning Program, **PL** – pain level, **PET** – pre test, **POT** – post-test, **PS** – problem solving, **R** – race, **RA** – role activities, **RE** – relaxation **ROM**- range of motion **QOL** – quality of life, **S** – strength **SC**-some college, **SE** – self efficacy, **SEC** – self care **SP** - Spanish **SRH**-self- rated health, **ST** – stretching, **TM**- took pain relief medication, **TUG** – timed up & go test, **V** – vocation, **VAS** – visual analogue scale, **W** – white ethnicity, **wks** – weeks, **yr** - year↓ - decrease, ↑ - increase

Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Decision for Use in Practice/ Application to Practice
			than 5 years, Kellgren / Lawrence classification grade 2 radiologic evidence of knee DOA in one or both knee, self reported disability due to knee pain for at least 3 of the following, descending or ascending stairs, walking, kneeling, or performing daily activities. **Exclusion Criteria:** an uncontrolled medical condition that precluded safe participation or prevented completion of the study, any neurologic condition that could affect coordination, inflammatory arthritis, previous knee surgery, Kellgren/Lawrence grade 3 or 4 radiographic		Western Ontario and McMaster Universities Osteoarthritis Index DV4:stiffness and disability subscales from the WOMAC, the physical function subscale from the SF-36 and VAS, range 0-100 Higher values indicated more disability DV5: ERGOS work stimulator			

AA – African American, AM – age mean, ARS – arthritis related symptoms, ASM – arthritis self management class, AU – aspirin usage, BL- baseline, BMI – body mass index, C – completed program, CAP- culturally adapted program, CCST- cognitive coping skills training , CG – college graduate, CS – communication skills, CU- corticosteroid usage, CX – control group, , D – diagnosis, DE – depression score DF – diagnosed with fibromyalgia, DI – disability, DO - diagnosed with other, DOA – diagnosed with osteoarthritis, DRA – diagnosed with rheumatoid arthritis, DV – dependent variable, E – education, EL – exercise level, EN – English, END – endurance, ER – emergency room, EX – exercise, F- fatigue, FB – feedback, FG – female gender, G – gender, GSF- generic chronic disease self-management class H - Hispanic HCU – health care utilization HG – high school graduate, HL – high school education or less, HO – hospitalizations, hr – hour , IG – intervention group, ISU- immunosuppressant usage, IV1- independent variable, L- language (English or Spanish), LOE – level of evidence, LS – living situation, M – mobility, MG – male gender, mon- month, MO – mood score, mons – months, MS – marital status, MU-medication usage n – sample size (studies), N – sample size (people), NCAP – non culturally adapted program, NP - non-completed program, NR - not reported, NU- NSAIDS usage, PAR - participants PB – pain beliefs, PBL – Problem Based Learning Program, PL – pain level, PET – pre test, POT – post-test, PS – problem solving, R – race, RA – role activities, RE – relaxation ROM- range of motion QOL – quality of life, S – strength SC-some college, SE – self efficacy, SEC – self care SP - Spanish SRH- self- rated health, ST – stretching, TM- took pain relief medication, TUG – timed up & go test, V – vocation, VAS – visual analogue scale, W – white ethnicity, wks – weeks, yr - year↓ - decrease, ↑ - increase

Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Decision for Use in Practice/ Application to Practice
			evidence of DOA in one or both knees a body mass index of >37.5, a knee corticosteroid injection in the previous 3 months, planning to move from local area, plans to become pregnant, more than 120 minutes per week of any vigorous exercise, , already participated in resistance training					

AA – African American, AM – age mean, ARS – arthritis related symptoms, ASM – arthritis self management class, AU – aspirin usage, BL- baseline, BMI – body mass index, C – completed program, CAP- culturally adapted program, CCST- cognitive coping skills training , CG – college graduate, CS – communication skills, CU- corticosteroid usage, CX – control group, , D – diagnosis, DE – depression score DF – diagnosed with fibromyalgia, DI – disability, DO - diagnosed with other, DOA – diagnosed with osteoarthritis, DRA – diagnosed with rheumatoid arthritis, DV – dependent variable, E – education, EL – exercise level, EN – English, END – endurance, ER – emergency room, EX – exercise, F- fatigue, FB – feedback, FG – female gender, G – gender, GSF- generic chronic disease self-management class H - Hispanic HCU – health care utilization HG – high school graduate, HL – high school education or less, HO – hospitalizations, hr – hour , IG – intervention group, ISU- immunosuppressant usage, IV1- independent variable, L- language (English or Spanish), LOE – level of evidence, LS – living situation, M – mobility, MG – male gender, mon- month, MO – mood score, mons – months, MS – marital status, MU-medication usage n – sample size (studies), N – sample size (people), NCAP – non culturally adapted program, NP - non-completed program, NR - not reported, NU- NSAIDS usage, PAR - participants PB – pain beliefs, PBL – Problem Based Learning Program, PL – pain level, PET – pre test, POT – post-test, PS – problem solving, R – race, RA – role activities, RE – relaxation ROM- range of motion QOL – quality of life, S – strength SC-some college, SE – self efficacy, SEC – self care SP - Spanish SRH- self- rated health, ST – stretching, TM- took pain relief medication, TUG – timed up & go test, V – vocation, VAS – visual analogue scale, W – white ethnicity, wks – weeks, yr - year↓ - decrease, ↑ - increase

Appendix D

Table 2

Synthesis Table

Studies	Carrington Reid	Parker	Lorig, Gonzalez	Goeppinger	Arvidsson	Coleman	Lorig, Ritter	Wu	Allen	McKnight
Year	2013	2011	1999	2009	2012	2012	2005	2010	2010	2009
LOE	III	III	II	II	II	II	II	III	II	III
Design	CEBS	QE	LRCT	LRCT	LRCT	RCT	LRCT	QE	RCT	LRT
Length	24 weeks	18 weeks	1 year	9 mons	1.5 yrs	6 mons	1 year	8wks	12 mos	24mos
Language										
Spanish	X	X	X	X (335)						
English	X	X		X(586)		X	X		X	X
Swedish					X					
Mandarin								X		
Race										
Hispanic	X	38 (112)	X	X					2%	
Caucasian	X	37 (112)		X			X		54%	86.3%
African American	X	37 (112)								
Other					X		X	X	46%	

CEBS - Comparative Effectiveness Blinded Study**, CG –** control group**, H -** Hispanic group**, IG –** intervention group**, LOE –** level of evidence, **LRT –** longitudinal randomized trial **LRCT –** longitudinal randomized control trial, **RCT –** randomized controlled study, **QE -** quasiexperimental↑ - increase, ↓ - decrease, * - signficant

Not Specified						X				
Population Age										
Age limitations in years	≥60	≥60		≥18			≥18	≥50		≤65 ≥34
Not Specified			X		X	X			X	
Intervention										
In-person Community Setting	X	X	X		X	X	X	X		X
Mailed intervention			X	X						
Telephone intervention									X	X
Specified population condition										
Rheumatoid arthritis			6.3% IG, 9.6% CG	33.8% IG, 32.9% CG			18% IG, 13% CG			
Osteoarthritis	95(201)	49(112)	53.2% IG, 45.4% CG	50.4% IG, 52.4% CG	3% IG, 5% CG	X	75.7% IG, 75.1% CG	X	X	X
Fibromyalgia				27.9% IG, 32.1% CG						
Unspecified musculoskeletal Pain	106 (201)	49 (112)	40.5% IG,		3% IG, 5% CG		10.5% IG,			

CEBS - Comparative Effectiveness Blinded Study**, CG –** control group**, H -** Hispanic group**, IG –** intervention group**, LOE –** level of evidence, **LRT –** longitudinal randomized trial **LRCT –** longitudinal randomized control trial, **RCT –** randomized controlled study, **QE -** quasiexperimental↑ - increase, ↓ - decrease, * - signficant

			42.7% CG				19.8% CG			
Infectious Joint Disease					81% IG, 72% CG					
Research findings										
Pain Level	↓	↓	↓*	↓*		↓*	↓*	↓*	↓	↓
Mood change (level of depressive symptoms)	↓*	↓	↓	↓						
Disability	↓		↓*	↓*			↓	↓		↓
Self-efficacy	↑	↑*H	↑*	↑*	↑*		↑*	↑	↑	
Exercise level	↑	↑*	↑	↑*		↑*	↑*			↑
Fatigue	↓	↓		↓*	↓		↓			
ROM	↑	↑	↑*							
Arthritis related symptom	↓	↓				↓*				

CEBS - Comparative Effectiveness Blinded Study**, CG** – control group**, H -** Hispanic group**, IG** – intervention group**, LOE** – level of evidence, **LRT** – longitudinal randomized trial **LRCT** – longitudinal randomized control trial, **RCT** – randomized controlled study, **QE** - quasiexperimental↑ - increase, ↓ - decrease, * - signficant

Appendix E

ASU Knowledge Enterprise Development

APPROVAL: EXPEDITED REVIEW

Ruth Deboard
CONHI - DNP
-
Ruth.DeBoard@asu.edu

Dear Ruth Deboard:

On 11/3/2015 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Self-Management Education and Arthritis Disability in an Underserved Latino Community
Investigator:	Ruth Deboard
IRB ID:	STUDY00003038
Category of review:	(7)(a) Behavioral research
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Appendix L-Sonja Kerth Proof of Citi Completion Certificate Part 1, Category: Non-ASU human

subjects training (if taken within last 3 years to grandfather in); • IRB protocol template, Category: IRB Protocol; • Appendix A- Arthritis Self Management Flyer for Patients , Category: Recruitment Materials; • Appendix Welcome Letter, Category: Recruitment Materials; • Appendix D-English Pre-Survey for Arthritis Self Management Project, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Appendix G- Script for Staff notifying patients of Arthritis Self Management Project, Category: Recruitment Materials; • Appendix J-English Post-Survey for Arthritis Self-Management Project, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Appendix H-Physical Activity Clearance Form, Category: Screening forms; • Appendix M- References for IRB protocol form, Category: IRB Protocol; • Appendix L- Sonja Kerth Proof of Citi Completion Certificate Part 2, Category: Non-ASU human subjects training (if taken within last 3 years to grandfather in); • Appendix E-Arthritis Self Management 3 Meeting Scripts, Category: Participant materials (specific directions for them); • Appendix K External Site Approval Letter, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Appendix I-Arthritis Self Management Script for Bi-Month phone calls, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Appendix B-English Consent for Arthritis Self Management Project, Category: Consent Form; • Appendix F- Walk with Ease Curriculum, Category: Other (to reflect anything not captured above);

The IRB approved the protocol from 11/3/2015 to 11/2/2016 inclusive. Three weeks before 11/2/2016 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 11/2/2016 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc:
      Sonja Kerth

Appendix F

The Neighborhood Christian Clinic
Restoring Health & Restoring Lives

September 9, 2015

To whom it may concern,

On behalf of the Neighborhood Christian Clinic, I am pleased to support the applied evidence based project entitled, "Self-Management Education and Arthritis Disability in the Latino Community" as proposed by Sonja Kerth and Dr. Ruth DeBoard.

In doing so, our practice agrees to serve as an applied evidence based project site for this data collection with the provision that all practice and patient specific identifying information be removed from any and all publications arising from this applied evidence based project.

Please feel free to contact me at plorentsen@tncclinic.org with any questions or if you require additional information.

Sincerely,

Paul Lorentsen, MD
Medical Director, Neighborhood Christian Clinic
1929 West Fillmore Street, Building C
Phoenix, Arizona 85009
(602)-258-6008

Appendix G

Patients with Arthritis

Would you like to move easier, have less pain, and improve strength, and well-being?

Join an evidenced based project as a part of an

Arizona State University research study and learn ways to

improve pain and disability caused by arthritis.

-Receive a free book about ways to improve arthritis symptoms

-Receive free one-on-one education about arthritis and treatment options

- Gain access to 1 hour voluntary arthritis meetings held twice over 4 weeks
If you have arthritis, speak and understand Spanish or English, and are between ages 18-90 years old, we invite you to join this project.

For more information, we invite you to provide your contact information below. When finished, tear off this section of the flyer at the dotted lines and give it to the clinic staff. We will contact you and give you more information about the Arthritis project.
Name:

Please Circle Preferred Language: English   or   Spanish

Phone number/Email:

Appendix H

Informed Consent
English Version

Study Title: Arthritis Self-Management Education in the Latino Community

Introduction

   You are being asked to take part in an evidence based project. The information in this form is being given to you to help you decide if you do or do not want to enroll. The people doing this evidence based project will answer any questions you have and give you more information. If you decide to take part in the evidence based project you will be asked to sign this consent form. A copy of this form will be given to you.

What is the purpose of this evidence based project?

   The reason for this evidence based project is to find out how effective arthritis self-management education is in decreasing disability and pain associated with arthritis.

Why are you being asked to participate?

    You are being asked to be in this evidenced based project because:
   1. You are between the ages of 18-90 years old
   2. You have a diagnosis of arthritis
   3. You speak and understand English or Spanish.
   .

How many people will be asked to participate in this evidence based project?

    About 30 people with a diagnosis of arthritis will be asked to participate in the project.

What will happen during this evidence based project?

    If you agree to be in this project you will:
   1. Fill out a survey form about your current arthritis treatment, pain level, disability level, and confidence level. You will fill out this same survey form again four weeks later.
   2. The survey questions will be in Spanish or English, your choice.
   3. An interpreter will be present to help you during the surveys, during the education, and during the meetings.
   4. You will receive education about self-management by a nurse after completing the initial survey and receive a free book that will give you more information on arthritis treatment options. Your medical provider will evaluate your physical readiness to start a walking program.
   5. You will be eligible to participate in arthritis group meetings and or individual phone calls every other week for a total of three. These meetings are voluntary and you will still be included in the project even if you decline to attend them.

How long will I be in the project?

    Approximately 45 minutes of your time will be needed for the survey and initial education. You then will have the option of attending one hour meetings and or receiving voluntary phone calls for 4 weeks after the initial meeting. The post test will be collected by mail, phone, or in-person at the

clinic, four weeks after your initial survey. The post survey will take about 5 to 10 minutes to complete.

Are there any risks to me?

You may find that the survey makes you tired. You may feel frustrated using an interpreter during the survey. You can stop being in the project if you get tired or frustrated. There is no physical, financial or employment risk. Your current ability to get health care through Neighborhood Christian Clinic or other health care provider will not change by being a part of this project. Your current ability to get health care also would not change if you decided you did not want to be a part of this project.

Are there any benefits to me?

1. Being in this project may help doctors and nurses provide better arthritis care at this clinic in the future.
2. You may get benefit by thinking more about the health care you receive.
3. You may get benefit by talking about your arthritis diagnosis and treatment with the nurse and other participants that attend the group meetings.

Will there be any costs to me?

Other than your time, there are no costs to you to be in this project.

Will I be paid to participate in the evidence based project?

You will not be paid to participate in this project.

Will video or audio recordings be made of me during the study?

No recordings will be made of you during project.

Will the information that is obtained from me be kept confidential?

1. The information you share in the pre and post surveys will be not contain your name. Your name will not be used in any reports or articles written about this project.
2. Individuals who have the job of protecting people who agree to be in projects (Human Subjects Protection Program) and the teachers who are supervising the nurse doing project may want to look at the information you share. If this happens, the information you share will be given to them but your name will not be included.
3. No information about your health insurance or residency status will be collected.

May I change my mind about being in this evidence based project?

Being in this project is your choice. You may decide to not be in the project. You may decide to stop being in the project at any time. Deciding you do not want to be in the study will have no effect on your employment. Your current ability to get health care will not change if you decide not to be in the project. You can change your mind at any time during the project. Any new information we find out during this project will be given to you. This information could change your decision to be in the project.

Whom can I contact for more information?

You can get more information about the project. You can talk about any concerns you have. To

do this, call the nurse doing the project, Sonja Kerth, RN, at 480-332-5995 or you can email at skerth@asu.edu. You can also contact the primary investigator, Ruth DeBoard PhD, RN, FNP-C by email at Ruth.DeBoard@asu.edu or phone at 602-496-0730.

If you have any questions about your rights as a participant in this project, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788. You can also contact the Human Subjects Protection Program by email.   Please use the following email address: research.integrity@asu.edu

Signature

By signing this form, I confirm that
1. I understand the information contained in the form.
2. That the project has been explained to me.
3. That my questions have been answered.
4. I agree to be in this project.
5. I do not give up any of my legal rights by signing this form.

_____
Name (Printed)

_____   _____
Participant's Signature   Date signed

Statement by person obtaining consent

I certify that I have explained the evidence based project to the person who has agreed to participate, and that he or she has been informed of the purpose, the procedures, the possible risks and potential benefits associated with participation in this project. Any questions raised have been answered to the participant's satisfaction.

Sonja Kerth
Name of Project Personnel

_____   _____
Project Personnel Signature   Date signed

Appendix I

Hello,

We invite you to participate in an evidence- based project about arthritis for a research project at Arizona State University. We know that arthritis is a significant problem in the United States and within the Neighborhood Christian Clinic. Therefore, we want to give you all the tools possible to improve your pain and disability associated with arthritis. Currently, there is no specific cure for arthritis but there are treatments that can improve symptoms and increase your quality of life.

This project will teach patients about ways of treating arthritis through education and exercise. We will be giving you a book that will teach you how to implement these new ways of treating arthritis and help you to develop an appropriate exercise routine. In addition, you will receive one 45 minute teaching from a nurse about arthritis and have the option to receive phone calls from the arthritis nurse throughout the 4 weeks of the project. Lastly, you will have the opportunity, if you are interested, to attend two additional one hour group meetings held at the clinic every other week. You will be asked to fill out a pre-survey when you start and a post-survey 4 weeks after that will evaluate your pain level, disability level, and confidence level.

Your participation in the project is completely free of charge. The methods to improve arthritis taught in this project have already been shown through research to decrease pain and disability, so we are excited to offer you this opportunity.

Sincerely,

Sonja Kerth RN, ASU FNP/DNP Student, Co-investigator

&

Dr. Ruth DeBoard, PhD, RN, FNP-C ASU Faculty Primary Investigator

Appendix J

Pre-Survey

How old are you in years?

What is your gender?   MALE   FEMALE

Do you identify as being of the Hispanic/Latino ethnicity?   YES   NO

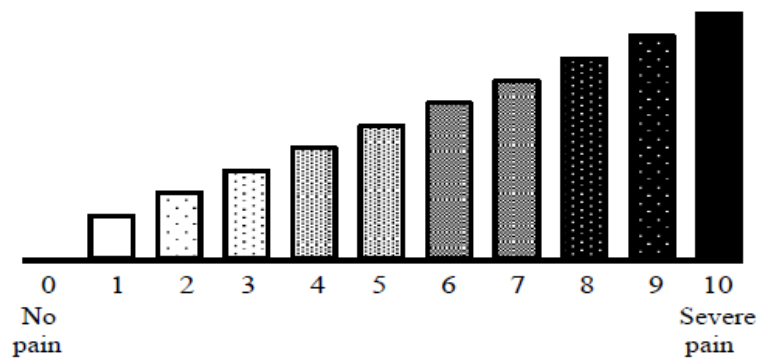Are you planning any upcoming surgeries? YES   NO

If YES, what surgery do you have planned?

Do you currently exercise?   YES   NO

Checkmark ALL the treatments you currently receive for arthritis treatment:

- ❑ No treatments at this time

- ❑ Steroid Injections

- ❑ Exercise

- ❑ Oral Pain Medication

- ❑ Heat or Cold Application

- ❑ Physical Therapy

We are interested in learning whether or not you are affected by PAIN. Please circle the number below that describes your pain in the past 2 weeks:

For each of the following questions, please circle the number that corresponds to how certain you are that you can do the following tasks regularly at the present time.

Current 8-item scale:

1. How certain are you that you can decrease your pain quite a bit?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

2. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with your sleep?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

3. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with the things you want to do?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

4. How certain are you that you can regulate your activity so as to be active without aggravating your arthritis or fibromyalgia?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

5. How certain are you that you can keep the fatigue caused by your arthritis or fibromyalgia from interfering with the things you want to do?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

6. How certain are you that you can do something to help yourself feel better if you are feeling blue?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

7. As compared with other people with arthritis or fibromyalgia like yours, how certain are you that you can manage pain during your daily activities?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

8. How certain are you that you can deal with the frustration of arthritis or fibromyalgia?

   very uncertain   1   2   3   4   5   6   7   8   9   10   very certain

Please check (✓) the **one** best answer for your abilities.

At this moment, are you able to:	Without ANY difficulty	With SOME difficulty	With MUCH difficulty	UNABLE to do
1. Dress yourself, including tying shoelaces and doing buttons?	❑	❑	❑	❑
2. Get in and out of bed?	❑	❑	❑	❑
3. Lift a full cup or glass to your mouth?	❑	❑	❑	❑
4. Walk outdoors on flat ground?	❑	❑	❑	❑
5. Wash and dry your entire body?	❑	❑	❑	❑
6. Bend down to pick up clothing from the floor?	❑	❑	❑	❑
7. Turn faucets on and off?	❑	❑	❑	❑
8. Get in and out of a car?	❑	❑	❑	❑

Thank you for filling out this survey. The survey will help us to determine how your condition of arthritis affects your daily life.

References

Lorig, K., Brown, B. W. Jr, Ung, E., Chastain, R., Shoor, S., & Holman, H. R. (1989).Development and evaluation of a scale to measure the perceived self-efficacy of people   with arthritis. *Arthritis and Rheumatism, 32*(1), 37-44.

Lorig, K. R., Sobel, D. S., Ritter, P. L., Laurent, D., & Hobbs, M. (2001). Effect of a self-management program on patients with chronic disease. *Effective Clinical Practice*, 4, 256-262.

Ritter, P. L., González, V. M., Laurent, D.D., & Lorig, K. R (2006). Measurement of pain using the visual numeric scale. *Journal of Rheumatology, 33*(3), 574-80.

Appendix K

Walk with Ease Meeting Script

Meeting 1

Hello. I am excited to help you understand and manage your arthritis better.

What is your current understanding of arthritis? How do arthritis symptoms currently affect your life? Do you have any specific symptoms you are concerned about?

I am inviting you to join the Walk with Ease (2010) program put out by the Arthritis Association. There are several goals of this program. First, you will learn more about your arthritis condition and how you can better manage it. Secondly, you will learn about the importance of exercise and how to exercise while having arthritis. Lastly, you will learn how to set personal goals in order to complete an exercise program as a part of your personal management of arthritis (Walk with ease, 2010). Before you start the walking portion of this program, you will obtain a clearance for walking from a medical provider.

I am giving you a book that will have a lot of the information about arthritis and exercise. We will go over the book content and other helpful arthritis information during the meetings. It is broken down into six chapters, however it is suggested you read the first three chapters in the first week. I am offering two more voluntary group meetings after this. They will each be scheduled two weeks apart from today. During the group meeting, we can discuss your progress, go over what you have read, and I will be available to answer any questions you have. You can attend the meetings even if you don't read the book. The meetings are voluntary. If you don't wish to attend, that is acceptable and you can still be part of the project. By simply making some small changes from our discussion today, you have the opportunity to improve your health.

Arthritis is a group of conditions that causes pain in the joints. There are over 100 different types of arthritis conditions. However, we will focus on rheumatoid and osteoarthritis. These are the two most common types of arthritis. If you are aware that you have a different type of arthritis, I am happy to educate you on your specific type. Know that you are not alone in having arthritis; over 50 million Americans have been diagnosed with arthritis. While there is no cure specific for arthritis, there are a lot of treatments we can do to improve pain and quality of life (Walk with ease, 2010).

Osteoarthritis is classified as a non-inflammatory arthritis (Lorig, & Fries, 2006) Osteoarthritis occurs as a result of wearing down of the joints and damage to the cartilage. Cartilage is tissue that surrounds the joint (Lorig, & Fries, 2006). This can be related to a previous history, genetics, obesity, or may not have a known cause. Exercise is especially important for this type of arthritis. This is because the cartilage needs activity to stay healthy. The joints are able to receive nourishment through exercise. Therefore, while there may be some short term pain associated with movements, in the long term the joint will get worse if it does not receive regular movement (Walk with ease, 2010). However, it is important to alternate rest with movement, and only participate in activities with moderate movement. A good rule to follow when exercising is "You goal is to exercise so that the pain is not worse two hours after you exercise than before you started" (Walk with ease, 2010, Ch.2). It is also important to have a healthy body weight, so as not to put too much stress on your joints. Regular exercise can help you to maintain a healthy body weight (Walk with ease, 2010).

Rheumatoid arthritis is caused by inflammation in your joints and is categorized as inflammatory arthritis (Lorig, & Fries, 2006). The presentation and underlying cause of it is much different from osteoarthritis. Rheumatoid arthritis occurs when your body mistakenly

attacks itself, leading to inflammation of the joints. This is classified as an autoimmune disease.

Usually rheumatoid arthritis affects both sides of the body rather than just one side. In addition,

rheumatoid arthritis can also cause increased tiredness, decreased appetite, and weight loss. If

you have rheumatoid arthritis it is important to take medications as prescribe that help prevent

flare ups when the inflammation of joints and other symptoms are worsened. These medications

are different from pain medication that may be taken for symptom management. During flare ups

you can have joint swelling, redness, warmth, pain, tenderness, fatigue, morning stiffness,

muscle aches, and overall not feeling well. During flare-up periods, you may need to decrease

your amount of exercise and focus on resting. However, some gentle movement such as range of

motion, which is directed in the booklet, is still helpful to keep the joints moving even during

periods when you are resting due to flare ups. When you are not having flare ups, doing low

impact exercise such as walking is important in maintaining your overall health (Walk with ease,

2010).

Now that we know a little bit about arthritis, I am going to talk about how to start a walking

program. Before starting a walking program you should ask yourself these questions. Do you

have heart trouble, chest pain, often feel faint or dizzy, or have uncontrolled high blood pressure?

If so, you should check with your doctor before starting your walking program to make sure it is

safe. Also, if you have had joint surgery, you will need to consult your doctor to ask about any

restrictions or modifications that you may need to incorporate (Walk with ease, 2010).

In order to start the walking program, you should identify what problems you are most

concerned about in regards to walking. Then ask the cause of this problem. Lastly try out some

different solutions. For example if you are having pain during longer walking stretches that may

mean you need to cut back the amount your walking at first. If you feel unmotivated or bored try

and make walking fun by changing the location or walking with a friend. An important part of

managing your condition is you deciding you are mentally ready and willing to make a change to

help your health (Walk with ease, 2010).

The goal is to work up to walking 30 minutes a day, five days a week if cleared by your

medical provider to exercise. To start, try to walk three days per week for a couple of minutes

each day, and build up your time walking to 30 minutes gradually. It is also okay to break up the

30 minutes of walking into 10 minute increments done three times. Research has shown this is

also effective.

Moderate activity is the level where your body is working, but you can still talk fairly

normal and carry on a conversation. In order to begin your walking program you need to make

sure have proper fitting shoes and socks. Within your book, Walk with Ease, we will go over the

following sections in order to prepare. These sections include

- Shoe Checklist (Walk with ease, 2010, p. 39).

- Exercise Checklist (Walk with ease, 2010, p. 34).

- Clothes Checklist (Walk with ease, 2010, p. 42).

- Exertion Information (Walk with ease, 2010, p.4).

- How to choose a suitable walking surface (Walk with ease, 2010, p. 50).

- How to choose a good location (Walk with ease, 2010, p. 48).

Creating walking plan

Once you are able to work up to ten minutes of walking per day, you are ready to incorporate

the 5-step basic walking pattern. This includes warming up for 3-5 minutes, stretching gently for

4 to 5 minutes, holding each of the four stretches for thirty seconds, walking for 5 to 30 minutes

or longer, cooling down for 3 to 5 minutes, and gently stretching for 7 to 9 minutes. These are

the same stretches you did before, but holding each stretch for 45 seconds to 1 minute . Refer to the 5 step basic walking plan within your workbook (Walk with ease, 2010).

There are several parts of a walking plan in order to increase the likelihood to be more successful. First set goals and make a contract. There are example goals and contracts in the work book. Feel free to write in the book and utilize the forms within the book. Next, keeping a record of your exercise daily will help ensure you will stay with the program. You can then use the self-tests at the end of each chapter to measure your progress. It is also important to celebrate your weekly accomplishments and then make a new goal once your initial goal is accomplished. I will show you the stretches demonstrated in the workbook. If you have any questions I am happy to help you. If you are concerned about your balance, I will show you the sitting options (Walk with ease, 2010). Do you have any questions about the walking plan? I would suggest that you read through chapter 1-3 as review of our meeting today during the next week. Everything we have gone over today is in your workbook. During these next few weeks, I would encourage you to read one chapter a week, after the first initial week. I will call you on the weeks we do not meet to see if you have any questions. Also, if you wish not to read the workbook, we will be going over the other chapters of the book during the upcoming two meetings held on (insert dates). These meetings are voluntary and you will still be included in the project even if you don't attend them.

Meeting 2:

Today, we are going to discuss possible barriers that you may encounter when starting a walking program after being cleared by your medical provider to exercise.

Pain is a common barrier when starting an exercise program in with people with arthritis. Pain from arthritis has three main sources.

First, arthritis can cause pain from damaged or inflamed joints and tissue.

Secondly, arthritis can cause pain from weak and tense muscles. Muscles can become this way as a response mechanism to the damaged joint. However, many muscles may not be strong enough to endure the extra stress caused by the damaged joint, resulting in weak and tense muscles. When muscles are tense for prolonged periods, lactic acid can build up causing increased soreness.

Third, pain can cause fear and depression. When you are upset and depressed, everything can appear worse, including pain.

Acknowledging, that exercise may not be pain free initially is an important part of understanding barriers associated with exercise in the presence of arthritis. While exercise can cause temporary discomfort, it is important to realize the long term benefits of exercise as a part of long term pain management. Regular exercise helps arthritis pain by making the muscles surrounding the joints stronger, reducing muscular stress, and lessening depression (Walk with ease, 2010).

Have any of you been able to increase your walking exercise since our initial meeting? How do you feel during your walks? How do you feel after your walks? What barriers have your run into?

There are several ways to help control the pain. Refer to What Can I do Today section of the workbook (Walk with ease, 2010).

Next I will demonstrate the 4 stretching techniques that are found in your book.

Lastly, I will demonstrate how to measure your pulse. You can use this to manage your intensity by measuring your heart rate. There are several medications that can affect your heart rate including heart medications, blood pressure medications, medicines for depression, anxiety, or mood disorders, cold medicines, diet medicines and asthma medicines. If you are on any of these

medications, it is better to use the talk test we already went over, whereby you can continue to

hold a conversation while exercising (Walk with ease, 2010).

Do you have any other questions regarding your arthritis or your exercise program if you are

cleared by your medical provider to exercise?

Meeting 3:

Hello, today we will be talking about arthritis medications , common walking problems and

community resources.

First, we will be talking briefly about arthritis medications and steroid injections. First of all, you

should consult your medical provider individually before starting any new drug.

There are four different groups of medications used to treat arthritis that we will be discussing.

The first group is nonsteroidal anti-inflammatory drugs. These drugs work to reduce both pain

and inflammation. Drugs in this group include aspirin, Naprosyn (Naproxen), and

motrin(ibuprofen). These drugs reduce pain and may lower inflammation. One of the major side

effects is the increased risk of stomach ulcers, although each medication has its own set of side

effects. While Tylenol(acetaminophen) is not an NSAID, it is also helpful in reducing pain and

does not have the side effect of increased risk of stomach ulcers. It does not work to decrease

inflammation and is digested in the liver. This drug group and acetaminophen may be helpful

with osteoarthritis and other non-inflammatory arthritis (Lorig, & Fries, 2006).

The second group is strongly anti-inflammatory, disease modifying anti-rheumatic drugs

(DMARD) which are only taken for inflammatory arthritis such as rheumatoid arthritis. They are

not used for osteoarthritis. These drugs are very important in slowing the progression of

inflammatory arthritis disease process. Methotrexate is the most commonly prescribed. These

drugs need to be taken as prescribed and monitored closely by your doctor. These drugs lessen

the progression of the disease in addition to decreasing pain and inflammation. Some of these

drugs such as methotrexate have immune suppressant properties which are specifically used in

autoimmune causing disease such as rheumatoid arthritis (Lorig, & Fries, 2006).

The third group is analgesic drugs. Most often, these drugs should not be used when

treating arthritis because they don't do anything to help improve your arthritis condition. These

drugs only affect your perception of pain. In addition, the longer you take these drugs your body

will become tolerant, where the normal dose no longer works. These drugs have significant side

effects that include changing the way you think, causing stomach distress, and constipation.

These drugs are often not helpful as part of your long term treatment of arthritis (Lorig, & Fries,

2006).

The last group we will talk about is corticosteroid hormone anti-inflammatory drugs.

These drugs are usually only used in inflammatory arthritis such as rheumatoid arthritis when

given orally. These drugs have some significant side effects, so it is important that you are

closely monitored by a doctor while taking them and that you take them exactly as prescribed.

(Lorig, & Fries, 2006).

Steroid injections are sometimes used in the treatment of osteoarthritis and rheumatoid

arthritis, often for arthritis of the knee, to decrease inflammation along with exercise, and other

medications (Marsland, Mumith, & Barlow, 2014). Steroid injections only work in the particular

area that they are injected. In addition, you can only receive a certain amount of doses at one

particular site before the injection is at risk of causing bone damage to the particular site (Lorig,

& Fries, 2006). Unlike exercise, steroid injections do not provide long term pain relief. These

injections sometimes provide short term decrease in inflammation resulting in short-term pain

relief. However, the benefits differ between each patient. Therefore, this is not recommended as

the only form of treatment for arthritis, but is useful as an additional treatment in some people

when used carefully and only on a periodic basis based upon your doctor's recommendation and

how your body responds (Lorig, & Fries, 2006; Marsland et al., 2014).

Do you have any questions about arthritis medications?

Now we are going to discuss common walking problems.

There are two walking techniques that can affect your ability to walk

 The first thing to be aware of is whether you are over striding. This occurs when you are taking

too long of steps. When walking, you want to focus on taking short, natural steps in order to

avoid extra impact or bounce that could increase the stress in your joints (Walk with ease, 2010).

Another problem is leaning forward from your back when you walk. This can cause increase

stress on your back. Focus on maintaining good posture when you walk (Walk with ease, 2010).

Have any of you encountered these problems or others while walking? What do you do to fix

them? Refer to Common problems and What do You do sections within your Walk with Ease

book (Walk with ease, 2010).

Community resources:

One of the best local resources for arthritis is the Arizona Chapter of the Arthritis Foundation.

There website is: http://www.arthritis.org/arizona/. On this website, you will find a list of

possible programs to help with your arthritis (Walk with ease, 2010).

Questions:

Have any of you been able to increase your amount of exercise since starting the program if you

were cleared by your medical provider to exercise? Have you set any goals? Do you have any

specific questions related to your arthritis or new walking program?

References:

Lorig, K., & Fries, J. F. (2006). *The arthritis helpbook (6th ed.).* Cambridge, MA: Da Capo Press.

Marsland, D., Mumith, A., & Barlow, I. W. (2014). Systematic review: The safety of intra

articular corticosteroid injection prior to total knee arthroplasty. *The Knee, 21* (1), 6-11.

doi:10.1016/j.knee.2013.07.003

Walk with ease. (2010). Atlanta, Georgia: The Arthritis Foundation.

Appendix L

6
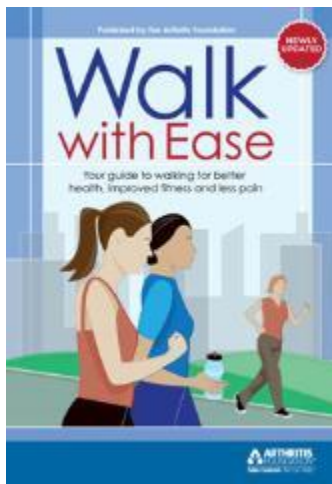
WALK WITH EASE (3rd EDITION)
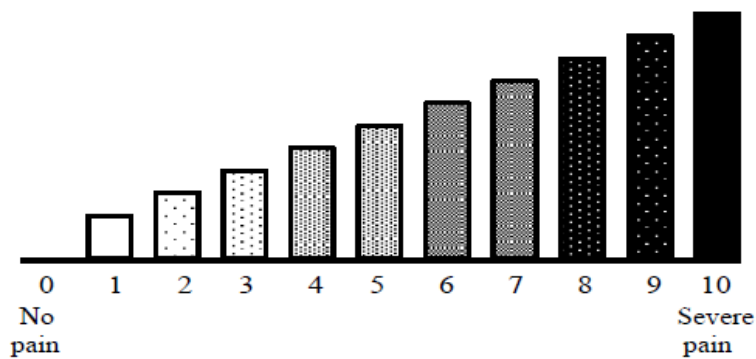
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Arthritis Foundation. (2010). *Walk with ease: Your guide to walking for better health, improved*

fitness and less pain. Atlanta, Georgia: Arthritis Foundation.

Appendix M

Post-Survey

Do you currently exercise?   YES   NO

We are interested in learning whether or not you are affected by PAIN. Please circle the number below that describes your pain in the past 2 weeks:

For each of the following questions, please circle the number that corresponds to how certain you

are that you can do the following tasks regularly at the present time.

Current 8-item scale:

1. How certain are you that you can decrease your pain quite a bit?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

2. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with your sleep?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

3. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with the things you want to do?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

4. How certain are you that you can regulate your activity so as to be active without aggravating your arthritis or fibromyalgia?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

5. How certain are you that you can keep the fatigue caused by your arthritis or fibromyalgia from interfering with the things you want to do?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

6. How certain are you that you can do something to help yourself feel better if you are feeling blue?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

7. As compared with other people with arthritis or fibromyalgia like yours, how certain are you that you can manage pain during your daily activities?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

8. How certain are you that you can deal with the frustration of arthritis or fibromyalgia?

   very uncertain | 1 2 3 4 5 6 7 8 9 10 | very certain

Please check (✓) the **one** best answer for your abilities.

At this moment, are you able to:	Without ANY difficulty	With SOME difficulty	With MUCH difficulty	UNABLE to do
1. Dress yourself, including tying shoelaces and doing buttons?	❑	❑	❑	❑
2. Get in and out of bed?	❑	❑	❑	❑
3. Lift a full cup or glass to your mouth?	❑	❑	❑	❑
4. Walk outdoors on flat ground?	❑	❑	❑	❑
5. Wash and dry your entire body?	❑	❑	❑	❑
6. Bend down to pick up clothing from the floor?	❑	❑	❑	❑
7. Turn faucets on and off?	❑	❑	❑	❑
8. Get in and out of a car?	❑	❑	❑	❑

Thank you for filling out this survey. The survey will help us to determine how your condition of arthritis affects your daily life.

References

Lorig, K., Brown, B. W. Jr, Ung, E., Chastain, R., Shoor, S., & Holman, H. R. (1989).Development and evaluation of a scale to measure the perceived self-efficacy of people with arthritis. *Arthritis and Rheumatism, 32*(1), 37-44.

Lorig, K. R., Sobel, D. S., Ritter, P. L., Laurent, D., & Hobbs, M. (2001). Effect of a self-management program on patients with chronic disease. *Effective Clinical Practice*, 4, 256-262.

Ritter, P. L., González, V. M., Laurent, D.D., & Lorig, K. R (2006). Measurement of pain using the visual numeric scale. *Journal of Rheumatology, 33*(3), 574-80.
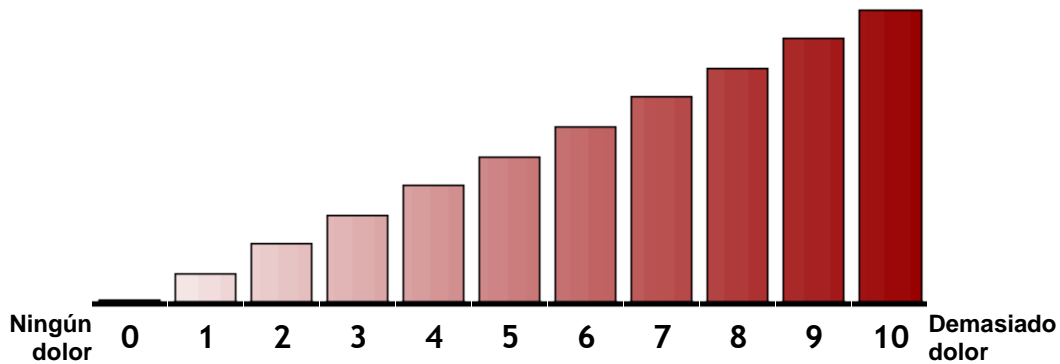
Appendix N

Spanish Pain Visual Numeric

Click here for English version (opens in new window)

Por favor marque en la escala de abajo el número que mejor describa la intensidad de su dolor durante la última semana:

Ningún dolor 0 1 2 3 4 5 6 7 8 9 10 Demasiado dolor

Scoring

The score is the number circled or histogram marked (radio buttons below the numbers are used on the Internet version). Scores range from 0 to 10, with the higher score indicating more pain. If two consecutive numbers are circled, score the higher (more pain) number, if two non-consecutive numbers are circled, do not score.

Characteristics

Tested on 317 Spanish-speaking subjects.

No. of items	Observed Range	Mean	Standard Deviation	Internal Consistency Reliability	Test-Retest Reliability
1	0-10	4.26	3.41	—	NA

Source of Psychometric Data

Stanford/El Paso Border Diabetes Project. Study reported in Lorig KR, Ritter PL, Jacquez A. Outcomes of Border Health Spanish/English Chronic Disease Self-management Programs. *The Diabetes Educator* 2005; 31(3):401-409.

Comments

This scale is a modified version of the visual analog scale. We found that this scale is easier for subjects to use, resulting in less missing and unclear responses. The psychometrics were done on a print black-and-white version of the scale above, which is printed in the PDF version of this page (see link on the bottom of this page). We have used these anchor phrases and a variation, "el dolor más fuerte imaginable " (pain as bad as could be), for the right-hand anchor. We have used "demasiado dolor" (severe pain)" for some time, in order to keep phrases for pain, fatigue, and shortness of breath scales consistent.

References

González VM, Stewart A, Ritter P, & Lorig K, Translation and validation of arthritis outcome measures into Spanish. *Arthritis and Rheumatism*. 38, 1995, pp.1429-1446. (above psychometrics not reported in this article)

To download this scale and scoring instructions, right click the link below with your mouse and "Save as" to you hard disk or desktop (for Windows), or double click (Mac):

Download PDF version

Appendix O

Stanford Spanish HAQ 8-Item Disability Scale

Click here for English version (opens in new window)

Por favor marque la respuesta que mejor describa sus habilidades usuales (comunes) durante la semana pasada.

¿Actualmente puede Ud:	Sin ninguna dificultad	Con alguna dificultad	Con mucha dificultad	No puedo hacerlo
1. Vestirse, incluyendo amarrarse los zapatos y abrocharse (abotonarse)?	0	1	2	3
2. Acostarse y levantarse de la cama?	0	1	2	3
3. Levantar hasta su boca una taza o vaso lleno?	0	1	2	3
4. Caminar al aire libre en terreno plano?	0	1	2	3
5. Bañarse y secarse todo el cuerpo?	0	1	2	3
6. Agacharse para recoger ropa del piso?	0	1	2	3
7. Abrir y cerrar las llaves del agua (los grifos)?	0	1	2	3
8. Subir y bajar del auto (carro)?	0	1	2	3

Scoring

Score the number circled for each item. If more than one consecutive number is circled for one item, code the higher number (more difficulty). If responses are not consecutive, code as blank. The disability index is the mean of the eight items. If more than 2 items are blank, do not score the index.

Characteristics

Tested on 272 Spanish-speaking subjects with arthritis. N=25 for test-retest.

No. of items	Observed Range	Mean	Standard Deviation	Internal Consistency Reliability	Test-Retest Reliability
8	0-3	1.7	.8	.89	.87

Source of Psychometric Data

The Stanford Spanish Arthritis Self-Management Study (Programa de Manejo Personal de la Artritis). The psychometrics were done on the original 20-item Spanish scale, resulting in this version. Psychometrics reported in: González V, Stewart A, Ritter P, Lorig K, Translation and validation of arthritis outcome measures into Spanish. *Arthritis and Rheumatism*, 38(10),1995, pp.1429-1446.

Comments

This is a modified version of the 20-item Spanish disability scale which we translated and back translated from the Stanford Health Assessment Questionnaire. We have replaced the numbers with check boxes on the print version. It should be noted that the items have been chosen as they represent use of every major joint in the body. While closely related to an ADL scale this is not an ADL scale but rather a disability scale.

References

González V, Stewart A, Ritter P, Lorig K, Translation and validation of arthritis outcome measures into Spanish. *Arthritis and Rheumatism*, 38(10),1995, pp.1429-1446.

To download this scale and scoring instructions, right click the link below with your mouse and "Save as" to you hard disk or desktop (for Windows), or double click (Mac):

Download PDF version

Appendix P

Spanish Arthritis Self-Efficacy

Click here for English version (opens in new window)

En las siguientes preguntas nos gustaría saber cómo le afecta el dolor de artritis y qué piensa Ud. de sus habilidades para controlar su artritis. En cada una de las siguientes escalas, por favor marque el número que mejor corresponda a su nivel de seguridad de que puede realizar en este momento las siguientes tareas.

1. ¿Qué tan seguro se siente Ud. de poder reducir bastante su dolor?

Muy
inseguro(a) 1 2 3 4 5 6 7 8 9 10 Muy
seguro(a)

Items (using the same format as above):

1. ¿Qué tan seguro se siente Ud. de poder reducir bastante su dolor?
2. ¿Qué tan seguro se siente Ud. de poder evitar que el dolor de la artritis interfiera con su sueño?
3. ¿Qué tan seguro se siente Ud. de poder evitar que el dolor de la artritis interfiera con las cosas que quiere hacer?
4. ¿Qué tan seguro se siente Ud. de poder regular su actividad para mantenerse activo sin empeorar (agravar) su artritis?
5. ¿Qué tan seguro se siente Ud. de poder evitar que la fatiga (el cansancio), debido a su artritis, interfiera con las cosas que quiere hacer?
6. ¿Qué tan seguro se siente Ud. de poder ayudarse a sí mismo a sentirse mejor si se siente triste?
7. Comparándose con otras personas con artritis como la suya, ¿qué tan seguro se siente Ud. de poder sobrellevar el dolor de artritis durante sus actividades diarias?
8. ¿Qué tan seguro se siente Ud. de poder sobrellevar la frustración debido a su artritis?

Scoring

The score for each item is the number circled. If two consecutive numbers are circled, code the lower number (less self-efficacy). If the numbers are not consecutive, do not score the item. The score for the scale is the mean of the eight items. If more than two items are missing, do not score the scale.

Characteristics

Tested on 272 Spanish-speaking subjects with arthritis. N=25 for test-retest.

No. of items	Observed Range	Mean	Standard Deviation	Internal Consistency Reliability	Test-Retest Reliability
8	1-10	5.9	2.1	.92	.69

Source of Psychometric Data

Stanford Spanish Outcome Measures Study. Results reported in: González V, Stewart A, Ritter P, Lorig K, Translation and validation of arthritis outcome measures into Spanish. *Arthritis and Rheumatism*, 38(10),1995, pp.1429-1446.

Comments

There is another way that we use to format these items, which takes up less space on a questionnaire, shown in the PDF document (click the PDF link at the bottom of this page).

References

González V, Stewart A, Ritter P, Lorig K, Translation and validation of arthritis outcome measures into Spanish. *Arthritis and Rheumatism*, 38(10), 1995, pp.1429-1446.

To download this scale and scoring instructions, right click the link below with your mouse and "Save as" to you hard disk or desktop (for Windows), or double click (Mac):

Download PDF version

Appendix Q

Table 3

Cost Analysis

	Activities	Cost	Subtotal	Total
Preparation	IRB approved translation of materials	$200	$200	$200
Preparation	Printing Consent, Surveys, welcome letter, flyers	$15	$15	$15
Delivery	Evidence Based Self-Management Arthritis Curriculum in Spanish and English	$11.95/person	$11.95x12	$143.40
People	Arthritis Resource Nurse (Co-investigator)	$0		$0
Evaluation	Post-test postage stamps	$0.42/person	$5.04	$5.04
Total				$363.44

Appendix R

Table 1

Demographics of Consented Patients

Demographic	N	M(SD)	Percentile
Age(years)	12	54(14.59)	48.5 at 50%
Male	3		25%
Female	9		75%
Spanish Speaking	10		83.3%
English Speaking	2		16.7%
Hispanic Ethnicity	11		91.7%
Currently Exercise	2		16.7%
Do Not Exercise	10		83.3%
No treatments	8		66.7%
Received Treatments	4		33.3%
Steroid Injections	4		33.3%
Arthritis Exercise	1		8.3%
Oral Pain Medicine	7		58.3%
Heat/Cold Application	1		8.3%
Physical Therapy	1		8.3%

Appendix S

Table 2

Scores of Three Instruments Evaluating Pain, Self-Efficacy, and Disability and Reports of Exercise

	Pre		Post			
	n	*M (SD)*	*n*	*M (SD)*	*P*	*Z*
Do you Currently Exercise?	12	.83 (.39)	7	.43 (.53)	.046*	-2.0
Numeric Pain Scale	12	5.75 (3.19)	8	5.2 (2.82)	.92	-.11
SE-Decreasing Pain	12	6.17 (2.98)	8	8.12 (3.04)	.11	-1.58
SE-Sleep Interference	12	6.17 (3.16)	8	7.25 (3.01)	.47	-.73
SE-Interference with things you want	12	6.00 (2.66)	8	6.75 (2.82)	.18	-1.36
SE-Regulate Activity	12	5.67 (3.03)	8	6.25 (3.37)	.35	-.94
SE-Manage Fatigue	12	6.17 (2.98)	8	5.63 (3.25)	.48	.71
SE-Help yourself feel better when sad	12	6.58 (2.39)	8	8.25 (1.91)	.17	-1.4
SE-Compared to others, Manage Pain	12	5.83 (3.27)	8	7.00 (3.02)	.26	-1.13
SE-Deal with Frustration	12	7.42 (2.81)	8	7.5 (1.93)	.34	-.96
D-Dress yourself	12	2.33 (1.07)	8	2.88 (.35)	.32	-1.00
D-Get in and Out of Bed	12	2.17 (1.03)	8	2.5 (.76)	.32	-1.00
D-Lift a cup to your mouth	12	2.5 (.90)	8	3 (0)	.32	-1.00
D-Walk outdoors on flat ground	12	2.17 (1.11)	8	2.38 (1.06)	.58	-.56
D-Wash and Dry entire body	12	2.42 (1.00)	8	2.75 (.46)	.41	-.82
D-Bend down to pick up clothes	12	2.00 (1.04)	8	2.63 (1.06)	.41	-.82
D-Turn faucets on and off	12	2.50 (.67)	8	2.88 (.35)	.32	-1.00
D- Get in and out of car	12	2.00 (.85)	8	2.25 (1.04)	.56	-.58
Self-Efficacy (SE) Scored Test	8	6.27 (2.86)	8	7.07 (2.42)	.16	-1.4
Disability (D) Scored Test	8	2.41(.93)	8	2.66 (.41)	.25	-1.16

Note. SE=Self Efficacy Instrument ranked 1-10 with 10 indicating highest amount of self-efficacy, D=Disability Instrument ranked 0-3 with 3 indicating least amount of disability, P=2-tailed significance from Wilcoxon Signed Ranks Test.*p<.05