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Disability and Physical Therapy Services in Rural Nicaragua: A Pilot Study

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#1.1.0



#1.2.0



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<http://academicdepartments.musc.edu/musc/>

Impact Statement

#1.3.0



The purpose of this study was to identify background knowledge and perceptions of physical therapy services for persons living in rural communities surrounding Chinandega, Nicaragua. This study identified a general lack of knowledge of physical therapy services within a 100-mile radius of Chinandega. Although there were larger differences noted between males and females, this study found very high rates of self-reported low back, neck and elbow/wrist/hand pain across both

groups. Social factors appear to play a role in persons' understanding of disability and the treatment of pain using physical therapy services. Further studies should be conducted to discern how best to deliver non-medical therapies to address potential rehabilitative needs.

Abstract

#1.4.0



The World Health Organization (WHO) estimates that 15% of the world's population is living with disability, a large majority of which can be found in developing nations. Previous studies in Nicaragua have investigated the perceptions of disability among caregivers and noted limited access to rehabilitative services. However, the general knowledge and perceptions of physical therapy services in Nicaragua remains unclear. As a result, this pilot study sought to explore the local knowledge and perceptions of disability and physical therapy services and to characterize the sample from a remote area of northwestern Nicaragua. Participants were recruited using convenience sampling during multi-disciplinary medical outreach clinics with OneWorld Health. A nine-question, face-to-face questionnaire was administered using local Nicaraguan translators certified in medical Spanish. A total of 101 participants [16 (15.8%) male, 85 (84.2%) female] were surveyed. A total of 70 (69.3%) report having no knowledge of physical therapy, 79 (78.2%) report no knowledge of anyone who has received physical therapy, and 89 (88.1%) were unaware of any physical therapy services available to them. A total of 94 (93.1%) report having musculoskeletal pain, and 89 (88.2%) report that medications are better at treating their pain. Our results describe the general perception and background knowledge of physical therapy in a unique region of Nicaragua. A very high burden of musculoskeletal complaints, especially neck, low back, and elbow/wrist/hand pain was noted. In large part, it appears that participants from this region have little knowledge of physical therapy and how these services may help them. This study demonstrates that there may be underlying contextual factors, still yet to be uncovered, that influence this communities' knowledge, perception, and utilization of physical therapy services for physical disability.

Introduction

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The World Health Organization (WHO) estimates that 15% of the world's population, or 1 billion persons, are living with disability, a large majority of which can be found in developing nations (World Health Organization 2011 [D](#); Harkins, McGarry, and Buis 2013 [D](#)). Unfor-

#2.0.1



[1](#) World report on disability (The Lancet)

unately, it is also well known that disability disproportionately affects the poor, women, and the elderly, whom also frequently suffer from extremely limited access to healthcare resources (International Labour Organization; United Nations Educational, Scientific and Cultural Organization; World Health Organization 2004 [D](#); World Health Organization 2011 [D](#)). A large proportion of investment in global health has historically been focused on medical and pharmaceutical interventions, and less so on the rehabilitation sciences, such as physical and occupational therapy. Persons with physical disability in developing nations could benefit greatly from increased knowledge of, and access to, rehabilitative services. However, persons with disability may be challenged to a greater degree with respect to accessing the necessary health care and resources they need. Fortunately, there is a renewed focus on rehabilitation services, as organizations such as the World Confederation for Physical Therapy believe “the profession has a major contribution to make in furthering global health (Dean et al. 2011 [D](#); Dean et al. 2014 [D](#)).”

In order to more adequately address the rehabilitative needs of persons with disability in communities of rural Nicaragua it was pertinent to sufficiently assess certain contextual factors intrinsic to our community of interest. Previous studies have noted limited access to rehabilitative services in Latin America, particularly in Nicaragua, the second poorest country in the Western Hemisphere (Matts 2006 [D](#); CIA World Factbook 2012 [D](#)). Rural areas of Nicaragua also have a unique socioeconomic, geopolitical, and demographic composition (CIA World Factbook 2012 [D](#)) that were of great interest in prior rehabilitative needs assessments. Many challenges and limitations exist in accessing healthcare resources for a large proportion of low- and middle-income countries, and tend to be unique to each community (Steele and Beitman 2015 [D](#)). Having a more solid background understanding of some of these contextual factors, such as certain knowledge and perceptions, allowed our team to develop strategic goals for inquiry.

Many prior studies in global health have examined the influence of one’s perception of disability and physical therapy services in other developing nations around the world. However, the general knowledge and perceptions of disability and physical therapy services in Nicaragua remains unclear. As a result, the primary aim of this pilot study was to explore the local knowledge and perceptions of disability and physical therapy services in a remote area of northwestern Nicaragua. Exploratory measures were: 1.) to determine any relationships between age, gender, prevalence of musculoskeletal pain, perception of disability, and whether or not Nicaraguans in this area had knowledge of physical therapy services to help address health issues; and 2.) to ascertain whether or not a typical group of patients who present for care at a medical outreach, or “medical mission,” had the need for physical therapy or the knowledge of its potential impacts.

- 2 *Provision of prosthetic and orthotic services in low-income countries: A review of the literature* (Prosthetics and Orthotics International)
- 3 *CBR A Strategy for Rehabilitation, Equalization of Opportunities, Poverty Reduction and Social Inclusion of People with Disabilities*
- 4 *World report on disability* (The Lancet)
- 5 *The First Physical Therapy Summit on Global Health: implications and recommendations for the 21st century* (Physiotherapy Theory and Practice)
- 6 *The Second Physical Therapy Summit on Global Health: developing an action plan to promote health in daily practice and reduce the burden of non-communicable diseases* (Physiotherapy Theory and Practice)

#2.0.2



- 1 *Perceptions of disability among caregivers of children with disabilities in Nicaragua: Implications for future opportunities and health care access* (Disability Studies Quarterly)
- 2 *Nicaragua - Country Profile*
- 3 *Nicaragua - Country Profile*
- 4 *Inclusion of physical therapy services on a short-term mobile medical mission team to Nicaragua: a qualitative description study of team members’ observations and recommendations for improvement* (Christian Journal for Global Health)

#2.0.3





Methods

From May 2015 to May 2016, two separate and independent samples of subjects were obtained over 10 distinct days of rural outreach clinics within a 100-mile radius of Chinandega, Nicaragua, in the Northwest Pacific region. Patients self-presented to the medical outreach clinics and participants were subsequently selected using convenience sampling. Informed consent was obtained for face-to-face questionnaires that were administered by native Nicaraguan Spanish-speaking translators, whom had all previously undergone certification training in medical Spanish translating. Patients were included if they: presented with a perceived disability, requested rehabilitation therapy services, or desired medical evaluations. All participants were informed that participation in the survey was strictly voluntary and would not preclude them from receiving the necessary medical care services. Patients were excluded from analysis if they were under the age of 18 and unaccompanied by a parent or guardian, or if they were unable to respond to the questionnaire due to a health complication.

#2.1.1



To help eliminate bias, each patient survey was conducted prior to any encounter with therapy services or medical consultation. The knowledge and perceptions of disability and physical therapy services questionnaire can be found in Supporting Table 1. The Nicaragua Ministry of Health (MINSa), an official governmental agency, was present each day during all procedures and provided quality control and oversight during the administration of surveys, therapy services, and the entire outreach clinic. Descriptive statistics were performed using IBM SPSS 24 software for data analysis. T-tests were used for comparison of measures and P values <0.05 were considered significant.

#2.1.2



Results



A total of five participants were excluded from analysis as they did not completely fulfill the inclusion criteria. One subject, aged 16, was included for analysis upon completing the survey in the presence of a parent. A total of 101 participants [16 (15.8%) male, 85 (84.2%) female] were surveyed and included for analysis. Mean (SD) age was 45.6 (17.8) years, median age was 45 years, with a range of 1-87 years. Males were highly underrepresented across all age ranges. Complete participant demographics can be found in Table 1. A total of 70 (69.3%) reported having no knowledge of physical therapy, 79 (78.2%) reported no knowledge of anyone who has received physical therapy, and 89 (88.1%) were unaware of any physical therapy services available to them Table 1. A total of 94 (93.1%) reported having musculoskeletal pain, and 89

#2.2.1



(88.2%) reported that medications are better at treating their pain Figure 2. A full list of the frequency of musculoskeletal complaints can be found in Table 2. Importantly, there are more musculoskeletal chief complaints represented than there are number of participants due to some subjects reporting more than one complaint. Overall, the most frequently reported complaints were for neck, low back, and elbow/wrist/hand pain. Only 25 (24.8%) reported considering themselves disabled, and only 12 (11.9%) reported needing equipment or medical devices to help them move or walk around. A full description of disability characteristics by age and gender, and comparisons there of, can be found in Table 3. Overall, it appears that females were more likely to consider themselves disabled when compared to male respondents. There were no significant differences noted between males and females in the need for assistive devices with a perceived disability.

TABLE 1

#2.2.2



Subjects		N = 101
Age mean (SD)	45.6(17.8) years	
Gender N (%)		
Male	16 (15.8%)	
Female	85 ³ (84.2%)	
Age range	16 ³ – 87 years	
Median Age	45 years	

Participant Demographics.

TABLE 2

#2.2.3



Chief Musculoskeletal Complaint	Male (N)	Female (N)	% Male	% Female	T-test
Neck Pain	2	21	12.5	24.70	p<0.05
Low Back Pain	6	26	37.5	30.58	P=0.13
Elbow/Wrist/Hand Pain	9	8	56.25	9.41	p<0.05
Knee Pain	3	5	8.75	5.88	P=0.47
Ankle/Foot Pain	1	12	6.25	14.11	p<0.05
Shoulder Pain	3	8	18.75	9.41	p<0.05
Total Chief Complaints (N)	24	98	100	100	n/a

Participant Need for Therapy Services.

TABLE 3

#2.2.4



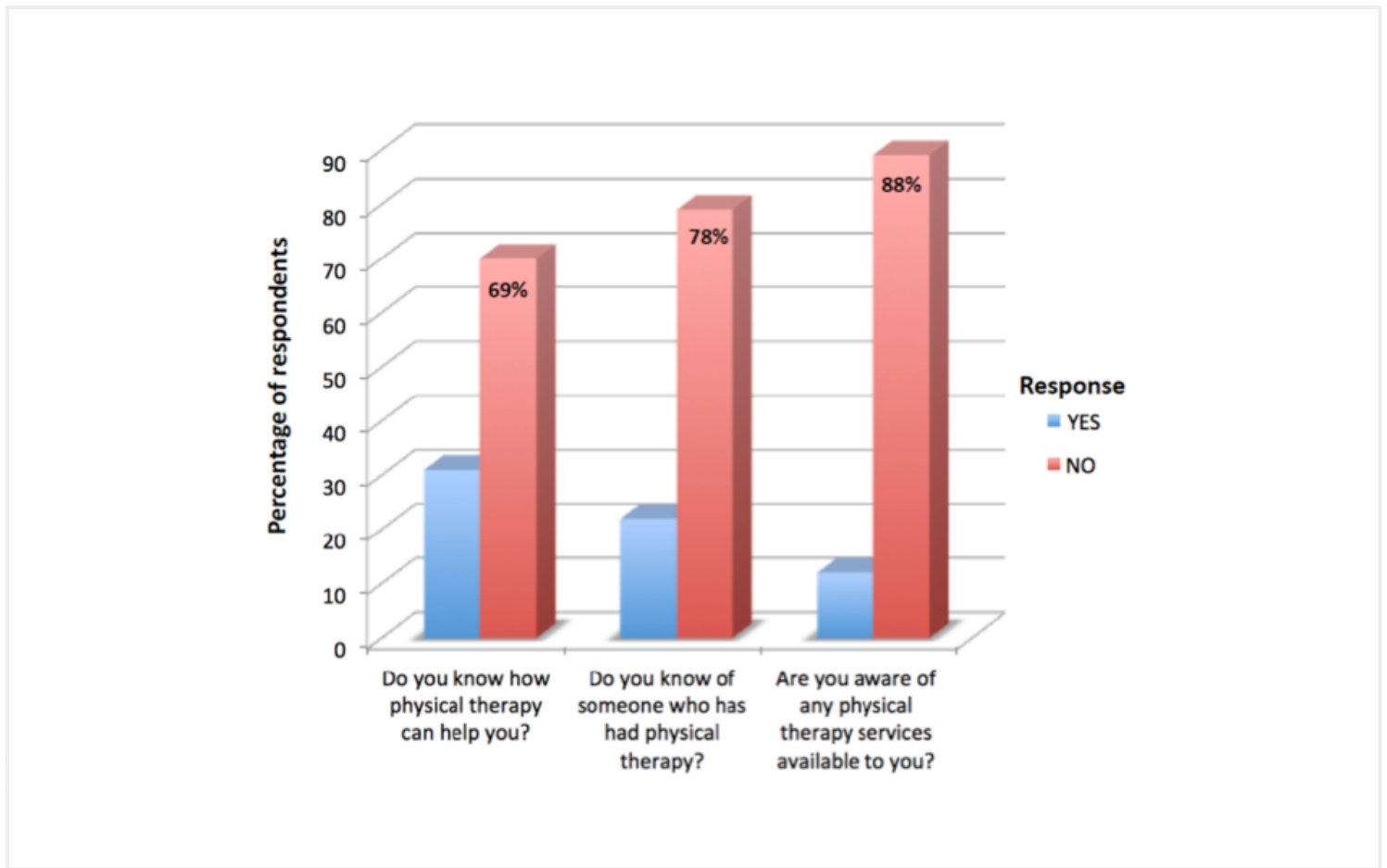
Characteristic	Males	Females	Both	Δ M/F T-test
Disability Responses				
Do you consider yourself disabled in any way? (N (%))	3 (18.75%)	22 (25.89%)	25 (24.8%)	P < 0.05
Disability Needs				
Disabled and DOES NOT need assistive equipment for mobility (mean age)	62.5	53.7	56.8	P = 0.204
Disabled and NEEDS assistive equipment for mobility (mean age)	57	69.7	67.9	P = 0.185
Participant Demographics by Age Quartile				
Q1: ages 16-32 ⁴ (N)	2	25	27.04	P < 0.05
Q2: ages 32-51 (N)	6	29	42.72	P < 0.05
Q3: ages 52-69 (N)	7	17	59.54	P < 0.05
Q4: ages 70-87 (N)	1	14	76.38	P < 0.05
Totals (N)	16	84 ⁴	45.625	P < 0.05

Disability and Age Characteristics.

FIGURE 1

#2.2.5



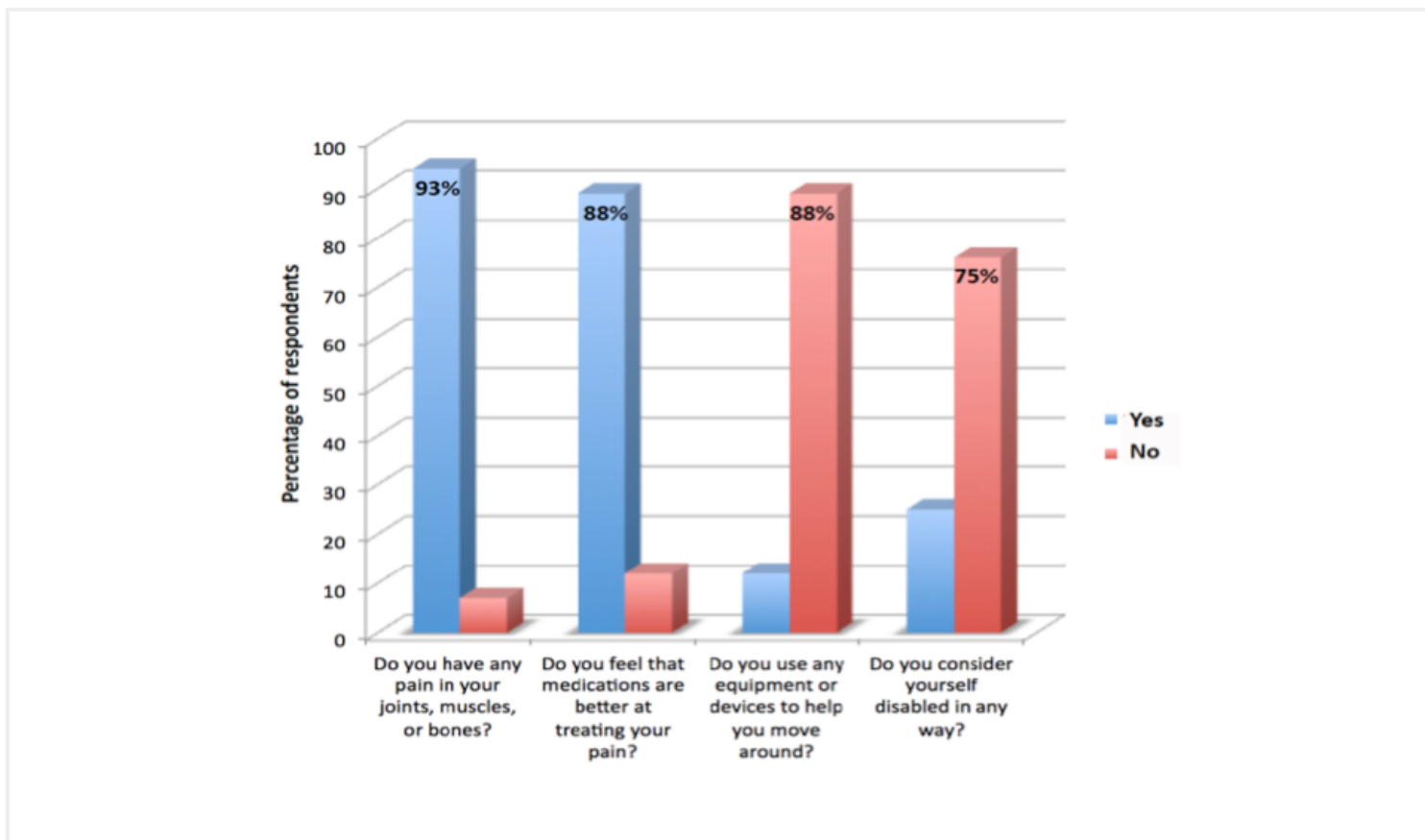


Knowledge and perception of physical therapy services.

FIGURE 2

#2.2.6





Results for pain and physical disability question items.

Discussion

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Our results describe the general perception and background knowledge of physical therapy in a unique region of Nicaragua. In large part, it appears that participants from this region have little knowledge of physical therapy and how these services may help them. A high prevalence of musculoskeletal pain was observed in our sample. A large portion of participants in the rural areas near Chinandega, Nicaragua self-reported a very high burden of musculoskeletal complaints, especially neck, low back, and elbow/wrist/hand pain. This can potentially be explained by the manual and agricultural nature of labor that exists in the area. Although the vast majority of our respondents reported medications as being superior for treating their pain, anecdotally there does appear to be an over reliance on medication for the treatment of pain in this re-

#2.3.1



gion. This can potentially be explained by various sociocultural factors intrinsic to this region and lay outside the scope of this study. Therefore, the results of this sample may not necessarily be indicative of the broader population's perception or pharmacological management of musculoskeletal pain. This appears to be good indicator that rehabilitation and therapy services could play a larger role to play in the non-pharmacological treatment of musculoskeletal issues. Furthermore, the large lack of knowledge of the availability of any rehabilitation services points to a potential lack of therapeutic service providers available to the communities of this region. Future studies should examine the availability of local resources to broaden understanding of therapeutic services through robust community needs assessments.

There is certainly the potential that the patient populations presenting to the local outreach clinics are experiencing the rehabilitation sciences for the very first time, and a future study to assess the perceived effectiveness of these services should be undertaken. Furthermore, the large burden of musculoskeletal issues noted certainly speaks to the necessity of including rehabilitation science professionals on short-term medical mission teams, in this area, and likely other areas around the world (Matts 2006 [D](#); Steele and Beitman 2015 [D](#)). Also, there appears to be a large portion of patients who self-report a significant physical disability and/or the need to use an assistive device for mobility. This percentage of patients, likely influenced by sample bias, is higher than noted in the general population (World Health Organization 2011 [D](#)), and also speaks to the utility of rehabilitation sciences in these areas. Differences between gender noted in our results should be cautioned given this sample may be an inaccurate depiction of the region and many confounding factors may exist in the cross sectional nature of this self-reported survey.

There are limitations to this study. Although the survey items were grounded in a theoretical approach, the use of this non-validated questionnaire adds uncertainty to the accuracy and interpretation of our results, and should be treated as such. Additionally, this study did not collect metrics to analyze the reliability of this survey tool and this could have impacted the administration and interpretation of our results. Therefore, future studies should seek to validate and test the intra- and inter-rater reliability of this questionnaire or seek to implement similar tools with stronger psychometric properties. A large female bias (84%) was observed and these results may misrepresent any conclusions regarding the general population of Nicaragua. Future studies should target higher recruitment of males and seek to replicate this inquiry in other underserved communities of need for rehabilitative care to ascertain the contextual factors that may impact the understanding of disability and physical therapy services therein. Although significant differences were noted between genders, the sample size and recruitment of participants may not be representative of the general population and could be inadequate in fully elucidating any true correlations. Sociocultural factors, such as males participating in manual labor during the workday and unable to access our clinic for inclusion in the study, certainly could have interacted with our study results.

#2.3.2



- 1 *Perceptions of disability among caregivers of children with disabilities in Nicaragua: Implications for future opportunities and health care access (Disability Studies Quarterly)*
- 2 *Inclusion of physical therapy services on a short-term mobile medical mission team to Nicaragua: a qualitative description study of team members' observations and recommendations for improvement (Christian Journal for Global Health)*
- 3 *World report on disability (The Lancet)*

#2.3.3



Conclusion

As global humanitarian work continues to increase among healthcare professions, it is important for clinicians to understand the needs and characteristics of the populations they aim to serve. This study demonstrates that education and advocacy should be a primary focus of future efforts to increase the awareness and understanding of the benefits of physical therapy for patients in developing nations. This study also demonstrates that there may be underlying contextual factors, still yet to be uncovered, that influence this particular communities knowledge, perception, and utilization of physical therapy services for physical disability. Mindful incorporation of the factors identified in this study should be taken into consideration in future studies and robust community needs assessments when targeting healthcare solutions in developing nations.

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#2.4.1



Highlights

- In large part, participants from this rural region of Nicaragua have little knowledge of physical therapy and show a decreased awareness with age.
- A high prevalence of musculoskeletal pain was observed, and most (89%) reported medications as being superior for treating pain due to their disability.
- Focus should be placed on education, advocacy, and awareness of physical therapy services for disability in developing nations.

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#2.5.1



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#3.0.1



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Supporting Information

SUPPORTING TABLE 1

#3.2.1



Question item	Response	
	YES	NO
Do you know how physical therapy services can help you?	YES	NO
Do you know of any physical therapy services available to you?	YES	NO
Do you know of anyone who has had previously physical therapy services?	YES	NO
Do you have any pain in your joints, bones, or muscles?	YES	NO
Have you ever tried physical therapy, stretches, or exercises to help your pain?	YES	NO
If so, did you notice any improvements in your pain as a result?	YES	NO
Do you feel that medications can be more effective at treating the pain in your joints, muscles, or bones?	YES	NO
Do you consider yourself physically disabled in any way?	YES	NO
Do you need to use any equipment or medical devices to help you move, walk around, or perform household activities?	YES	NO

English version.