

## **Impact of Osteoarthritis in the Quality of Life of Elderly Patients: Challenge on Professional Healthcare Formation and Practice**

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**Abstract:** In Puerto Rico, a country with a large elderly population, it is imperative for healthcare professionals and students in nursing and related health fields to be duly trained with the necessary skills and competencies to deal with this growing population. Rethinking of care plans, responsibilities, models and interventions must be reinforced to accomplish healthcare needs of the geriatric sector. This is an ineludible challenge in elderly caregiving. This quantitative study with a transversal, descriptive design was carried out with elderly patients of osteoarthritis located in the Metropolitan area of San Juan, Puerto Rico. Its objective was to identify the possible relationship between osteoarthritis and the quality of life of this population. The representative sample consisted of 380 elderly patients, 36.6% male and 61.3% female. Eight participants did not specify their gender (2.1%). A relationship was found between osteoarthritis and quality of life. Namely, this condition was found to have a negative impact in the quality of life of elderly patients. Poverty and lack of treatment options are aspects to consider, whereas the most affected areas are the hands and knees, impairing mobility and patients' ability to carry out activities of their daily living. This affects both their independence and daily coexistence, with a greater impact on women. This aspect of gender should be further scrutinized in future investigations. Aging population, particularly those with a chronic disease such as osteoarthritis, impose more and new challenges in the formation of health care students and the professional practice in general.

**Key-Words:** Nursing Education, Management, Nursing Competencies, Degree, Quality of Life, Elderly Patients, Osteoarthritis.

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## 1. Introduction

Approximately 40 million people in the United States, including Puerto Rico, suffer from some form of arthritis, the most common being osteoarthritis. The Center for Disease Control (CDC, 2015) points out that osteoarthritis, also known as osteoarthrosis, is a common type of arthritis: a chronic disease affecting the joints, particularly those involved in constant movement, it occurs due to attrition and destruction of joint surfaces. For the purposes of this study, we will refer to osteoarthritis as a type of degenerative arthritis affecting the joints.

Depending on the stage of osteoarthritis, this disease can severely impair the affected individual's ability to carry out activities of daily living. The resulting pain from this disease causes limited motion, reduced physical capability, restriction of social activities, and compromised work capacity (Agency for Healthcare Research & Quality, 2002). If the different forms of arthritis are left medically unattended, many patients are completely incapacitated, as they are unable to find and follow a treatment course which would allow them to continue their lives as normally as possible (Ley #120 de Puerto Rico, 2004). Patients often do not seek proper treatment for their arthritis due to lack of knowledge of treatment options.

Therefore, it is imperative for government authorities to reach out to citizens regarding this preventable situation and its timely treatment. Preventative treatment can avoid the severe consequences of this disease when it becomes a chronic ailment (Ley #120 de Puerto Rico, 2004).

This disease, which involves pain and progressive functional degeneration, is a common ground for medical consultation which incurs in high costs and often implies a decrease in quality of life. Studies have shown that up to 50% of people with symptomatic arthritis suffer from some degree of impairment which makes it impossible or highly difficult to execute their daily chores. Currently, research on osteoarthritis in the United States has used radiographic, symptomatologic and clinical markers to identify the disease.

Puerto Rico follows the guidelines developed by the United States to diagnose and treat osteoarthritis. These guidelines are endorsed by the Rheumatologist Association of Puerto Rico (Lopategui Corsino, 2013). Some of the risk factors for osteoarthritis are: aging, family history (genetics), obesity, gender (women show more predisposition), hormonal state (women), ethnicity (Asians and Caucasians show more predisposition). Secondary or weak risk factors include occupation, physical activity, muscular weakness, early menopause, post-oophorectomy, diabetes and hypertension.

However, in Puerto Rico, there are no exact statistics concerning the location of osteoarthritic joints in patients of this disease, one of the most common among the elderly population (National Institute of Arthritis and Musculoskeletal & Skin Diseases, 2013). This fact called for a profound study

of this disease, outlined in this article, whose general objective was to identify a possible relationship between osteoarthritis and quality of life in the elderly population. Moreover, the following specific objectives were established:

1. Estimate the prevalence of the different types of osteoarthritis among a sample of the elderly population of Puerto Rico.
2. Identify the relationship between osteoarthritis and quality of life in the studied sample of the elderly population.
3. Establish the relationship between degree of autonomy or independence, quality of life, gender and location of the osteoarthritic joints in the sample under study.
4. Determine the relationship between cohabitation, gender and quality of life in a sample of elderly patients of osteoarthritis.

This topic is important because there is no cure for osteoarthritis. The treatment route is to reduce the effects of this pathology, modify its progress and delay its consequences in patients' life. This paper serves as a contribution to enlighten about osteoarthritis in the Puerto Rican context. In addition, it can be helpful for healthcare professionals, including professional nurses, which constitute fundamental figures contributing to comprehensive care for the elderly population. The findings of the present study provide valuable information that empowers to promote a humanized and appropriate care starting at the onset of the formation of nursing students to ensure they have the knowledge, competencies and skills to provide quality, efficient and secure care for osteoarthritis patients. The results also serve as additional evidence for faculty supervisors, which must provide proper education for future professionals to meet the corresponding challenges, emphasizing reflection, critical thinking and prioritization (Iglesias-Parra et al., 2015), in this case concerning the needs and nursing care required by the elderly population and osteoarthritis patients.

## **2. Method**

This study is of a quantitative, transversal, descriptive design and included questionnaire administration. Transversal research is designed to measure the prevalence and/or result of exposure in a specific population at a particular point in time. It is useful to assess health care needs and to plan service provision, particularly important for chronic conditions which require medical attention during their development (Polit & Tatano, 2006).

### **2.1. Population and Sample**

The studied population consisted of osteoarthritis patients aged 65 years or older. Sampling was simple and random, representing the population of osteoarthritic patients in San Juan, Puerto Rico. In this Metropolitan area, according to primary care or rheumatologic data, 14,400 elderly patients are

estimated to seek osteoarthritis treatment on an annual basis. The researcher visited the chosen clinics and the instruments for data gathering were administered to 380 patients. According to the formula for determining sample size for research activities used by Krejcie and Morgan (1970), a sample of approximately 375 participants was required to achieve a 95% confidence interval in generalizing to the given population.

## 2.2. Instruments and Variables

The measurement instruments and studied variables are outlined below:

*Sociodemographic questionnaires.* A document the researcher developed to gather the following information regarding the participants: gender, age, civil status, level of education, household composition (including place of residence and with whom the participant lives), occupation, financial income, healthcare plan, location of osteoarthritic joints, amount of time with the disease and medication taken.

*Medical Outcome Study Short Form Health Survey questionnaire (SF-36 v2).* Used to assess the quality of life of surveyed participants according to the subject's perception of their general health status, as reflected by eight dimensions distributed among two components: Physical Health Component: Physical function (2), role-physical (2), bodily pain (1) and general health (2). Mental Health Component: Social function (1), role-emotional (2), mental health (2) and vitality (1).

The response options are presented in a Likert scale evaluating intensity or frequency. The amount of possible options ranges from three to six, depending on the item. The total raw scores calculated by each component were transformed to scores which went from 0 (worst state of health for the corresponding dimension) to 100 (best state of health). Scores superior or less than 50 points indicate a good or poor quality of life, respectively. Cronbach's Alpha for this instrument fluctuates between 0.79 and 0.96 (Alonso, Prieto & Anto, 1995).

*Barthel test.* This test was used to measure degree of dependence (no autonomy) or independence (total autonomy) of surveyed participants regarding the following daily activities: feeding, showering, dressing, toilet use including defecation and urination, walking, climbing/descending stairs and transferring (mobility). This test is the most widely used scale to provide a functional assessment of patients with acute pathologies, and is particularly useful in rehabilitation settings. The response categories of disability in each activity were defined and rated in scale steps (0, 5), (0, 5, 10), (0, 5, 10, 15) dependent on the item. The maximum overall score possible is 100 points. The scores were interpreted as follows: less than 20 points indicate total dependency (no autonomy); 20-35 indicate grave dependency (mild autonomy); 40-55 indicate moderate dependency (moderate autonomy); more than 60 is mild dependency (high autonomy); and a 100 points score is classified as an independent person (total autonomy). Cronbach's Alpha for

this test fluctuates between 0.86 and 0.92 (Cid-Ruzafa & Damián Moreno, 1997).

### 2.3. Procedure

Formal authorization was obtained for the use of assessment instruments and from the Institutional Review Board. Clinical visits were coordinated and participants recruited through a promotional sheet. Instruments were administered from August to October, 2015.

### 2.4. Statistical Analysis

The statistical package SPSS® 20 was used for data analysis. Central tendency and dispersion measures were calculated, as well as frequencies and percentages. Pearson correlations and multivariate analysis through logistic regression were carried out in order to establish the relationship between the variables in this study.

## 3. Results

### 3.1. General Profile of Participants

Of the 380 surveyed participants aged 65 or older, 61.3% were female. The age range was 65 to 97, with an average of 75. 71.8% indicated they were not married (single, divorced or widowed). 37.9% had college-level education and 36.1% just had a high school diploma. 62.1% were retired, 20.8% were housekeepers and 8.7% still worked. 35.8% indicated living alone, while 64.2% cohabited. Of these, 22.6% lived with their spouses, 23.1% lived with one or more family members and eight participants (2.1%) lived with someone who was not a family member. 16.6% lived in retirement homes. 67.9% indicated monthly incomes of \$1,000 or less, while 6.3% indicated no income. 79.5% had Medicare, whether by itself or in combination with another healthcare or insurance plan. Sociodemographic data examined by gender revealed variables associated with economic status were lower for women (Table 1).

|   | <b>Gender</b>               |                               | <b>Total</b><br><i>f (%)</i> |
|---|-----------------------------|-------------------------------|------------------------------|
|   | <b>Male</b><br><i>f (%)</i> | <b>Female</b><br><i>f (%)</i> |                              |
| Marital status ( <i>n</i> = 367)          |                             |                               |                              |
| Married                                   | 40 (29.9%)                  | 60 (25.8%)                    | 100 (27.2%)                  |
| Not married (single, divorced or widowed) | 94 (70.1%)                  | 173 (74.2%)                   | 267 (72.8%)                  |

|                                    |            |             |             |
|------------------------------------|------------|-------------|-------------|
| <b>Occupation (n=367)</b>          |            |             |             |
| Housewife                          | 14 (10.3%) | 64 (27.7%)  | 78 (21.3%)  |
| Retired not working                | 92 (67.6%) | 139 (60.2%) | 231 (62.9%) |
| Employed                           | 18 (13.2%) | 15 (6.5%)   | 33 (9.0%)   |
| Other                              | 12 (8.8%)  | 13 (5.6%)   | 25 (6.8%)   |
| <b>Monthly income (n= 372)</b>     |            |             |             |
| Less than \$500                    | 24 (17.3%) | 78 (33.5%)  | 102 (27.4%) |
| \$501 to \$1,000                   | 60 (43.2%) | 88 (37.8%)  | 148 (39.8%) |
| \$1,001 to \$2,000                 | 34 (24.5%) | 41 (17.6%)  | 75 (20.2%)  |
| \$2,001 to \$3,000                 | 10 (7.2%)  | 8 (3.4%)    | 18 (4.8%)   |
| More than \$3,000                  | 3 (2.2%)   | 2 (0.9%)    | 5 (1.3%)    |
| No income                          | 8 (5.8%)   | 16 (6.9%)   | 24 (6.5%)   |
| <b>Healthcare coverage (n=371)</b> |            |             |             |
| Health Reform Plan                 | 19 (13.7%) | 28 (12.1%)  | 47 (12.7%)  |
| Private plan                       | 5 (3.6%)   | 16 (6.9%)   | 21 (5.7%)   |
| Medicare                           | 24 (17.3%) | 39 (16.8%)  | 63 (17.0%)  |
| Combined coverage                  | 89 (64.0%) | 147 (63.3%) | 236 (63.6%) |
| None                               | 2 (1.4%)   | 2 (0.9%)    | 4 (1.1%)    |

Table 1. *Distribution of sampled elderly population in Puerto Rico sociodemographic description by Gender.*

The most common medication taken for osteoarthritis was acetaminophen (64.7%), followed by natural supplements (49.2%) and ibuprofen (47.9%). Medicines such as Celecoxib, Nabumetone or Meloxicam were used by less than 20% of participants. Upon examination of medicine consumption by gender, a greater percentage of women were found to use acetaminophen (67.8%) and natural supplements (51.1%). Men used more ibuprofen (50.4%), Celecoxib (18%) and Nabumetone (15.8%) than women (47.2%, 12%, 9%, respectively).

### 3.2. Prevalence of different types of osteoarthritis

For the purposes of this study, type of osteoarthritis refers to the affected area(s) by this pathology; this is the location of the osteoarthritic joints.

The participants can select more than one joint, if necessary. 79.5% indicated having osteoarthritis in more than one area of their body or

generalized to all areas of the body. 70.6% of participants indicated suffering from this disease for 1 to 10 years. 17.9% had been diagnosed with this severe disease more than 10 years ago.

The prevalence of osteoarthritis in knee and hand joints was most noteworthy, at 57.1% and 44.7%, respectively (Table 2). Other areas affected by osteoarthritis were the hips and shoulders, approximately 30% each, as well as the neck, lower back and ankles. 20% of the sample indicated having all areas affected by osteoarthritis.

| Type of osteoarthritis<br>(affected area) | Degree of autonomy                         |                          |                       |
|---|--|--------------------------|-----------------------|
|   | Some degree of<br>autonomy<br><i>f</i> (%) | Autonomy<br><i>f</i> (%) | Total<br><i>f</i> (%) |
| Shoulders                                 | 25 (22.3%)                                 | 87 (32.5%)               | 112 (29.5%)           |
| Hips                                      | 45 (40.2%)                                 | 68 (25.4%)               | 113 (29.7%)           |
| Hands                                     | 36 (32.1%)                                 | 134<br>(50.0%)           | 170 (44.7%)           |
| Knees                                     | 52 (46.4%)                                 | 165<br>(61.6%)           | 217 (57.1%)           |
| Other areas                               | 5 (4.5%)                                   | 4 (1.5%)                 | 9 (2.4%)              |
| All areas of the body                     | 48 (42.9%)                                 | 28 (10.4%)               | 76 (20.0%)            |

Table 2. Distribution of sampled elderly population in Puerto Rico by location of osteoarthritic joints (affected area) and degree of autonomy

The prevalence of osteoarthritis in the knees was greater for women (63.1%) when compared to men (47.5%), a statistically significant difference ( $chi^2$ : 8.66,  $p < 0.003$ ). As regards hand joints, the condition equally affected both genders, with 45.3% of men and 44.2% of women affected. Having all areas affected by osteoarthritis was more common for men than for women, with 25.9% and 15.9%, respectively ( $chi^2$ : 5.54,  $p < 0.019$ ). Elderly participants who expressed having only one area affected by osteoarthritis were younger than those who indicated having all areas of their body affected (Figure 1).

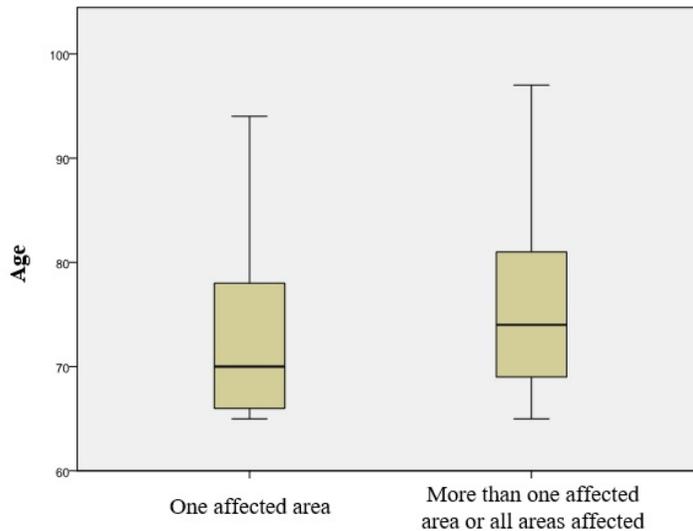


Figure 1. Age of sampled elderly population in Puerto Rico and their amount of areas affected by osteoarthritis.

#### 3.4. Relationship between osteoarthritis and quality of life

Quality of life was measured according to two main scores corresponding to: 1) the physical health component and 2) the mental health component. An overall score of the general state of health was calculated. Elderly participants indicated a poor quality of life, both generally (59.5) and physically (69.5%). As for their mental health, similar percentages were seen for both good (44.2%) and poor (43.4%) options.

53.8% of elderly participants who indicated having only one area affected by osteoarthritis indicated a good quality of life, whereas those with more than one area affected by osteoarthritis (63.6%) manifested a poor quality of life (presenting a risk 3.05 times as great,  $CI$  95% 1.6-5.7,  $p < 0.0001$ ).

Moreover, we found that the more years the participant had suffered from the condition, the more severe was the detriment in their quality of life (Table 3). Conversely, the fewer years the patient had suffered with the condition, the better his or her quality of life.

| Years experiencing osteoarthritis | Quality of life      |                         |                      |                       |
|-----------------------------------|----------------------|-------------------------|----------------------|-----------------------|
|                                   | Poor<br><i>f</i> (%) | Regular<br><i>f</i> (%) | Good<br><i>f</i> (%) | Total<br><i>f</i> (%) |
| Less than 1 year                  | 12 (35.3%)           | 1 (2.9%)                | 21 (61.8%)           | 34 (100.0%)           |
| 1 to 5 years                      | 64 (45.1%)           | 6 (4.2%)                | 72 (50.7%)           | 142 (100.0%)          |
| 6 to 10 years                     | 86 (68.3%)           | 5 (4.0%)                | 35 (27.8%)           | 126 (100.0%)          |
| More than 10 years                | 59 (86.8%)           | 3 (4.4%)                | 6 (8.8%)             | 68 (100.0%)           |
| Total                             | 221 (59.7%)          | 15 (4.1%)               | 134 (36.2%)          | 370 (100.0%)          |

Table 3. *Distribution of surveyed sample of elderly population in Puerto Rico by level of quality of life and years experiencing osteoarthritis*

The pathology's course of development conditions the quality of life of the elderly population with osteoarthritis. Every year of further development increases the risk for a worse quality of life (2.63 *CI* 95% 1.96-3.51,  $p < 0.0001$  for a poor quality of life; 1.98 *CI* 95% 1.04-3.76,  $p < 0.035$ ).

3.5. Relationship between degree of autonomy, quality of life, gender and location of osteoarthritic joints.

Regarding the degree of autonomy, 71.2% male and 70.4% female participants indicated being independent.

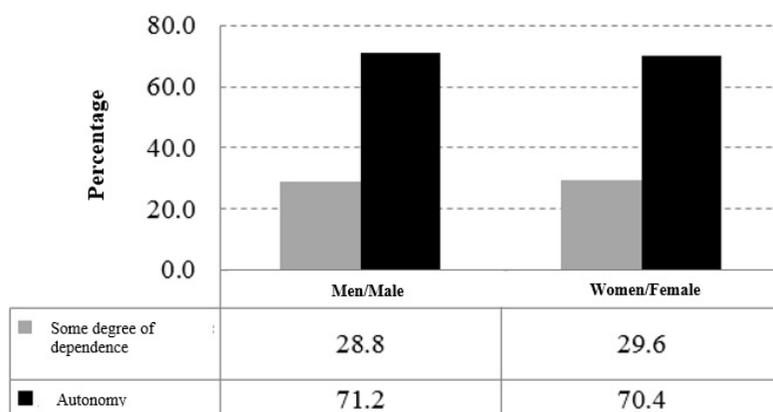


Figure 2. *Percentage distribution of sampled elderly population in Puerto Rico by gender and degree of autonomy.*

The Pearson correlation coefficients ( $r$ ) for quality of life and components of physical and mental health revealed a significant, positive correlation between degree of autonomy and quality of life. All Pearson coefficients were higher than .540 at a significant level ( $p < .01$ ) (Table 4). Namely, the greater the autonomy or independence, the greater the quality of life as reflected as much by physical and mental health as well as in general terms.

| Variable                        | Autonomy | QoL    | PHC    | MHC    |
|---------------------------------|----------|--------|--------|--------|
| Degree of autonomy (Autonomy)   | 1        | .588** | .586** | .544** |
| Quality of Life (QoL)           |          | 1      | .962** | .961** |
| Physical Health Component (PHC) |          |        | 1      | .850** |
| Mental Health Component (MHC)   |          |        |        | 1      |

Note: \*\* $p < 0.01$  (bilateral)

Table 4. *Pearson's Correlation Coefficients matrix for degree of autonomy and quality of life for sampled osteoarthritis, elderly patients in Puerto Rico*

Upon carrying out the instrument analysis by dimension, the highest correlations were seen between degree of autonomy, role-physical ( $r=.550$ ) and physical function ( $r=.532$ ). Similarly, we found a significant  $p$  value across four mental health dimensions ( $p < .0001$ ). Women who suffered from osteoarthritis indicated either total or a high level of autonomy, whereas a significant amount of men indicated being completely autonomous. This is followed by a practically equal distribution of men with moderate or high autonomy. Therefore, gender does not condition degree of autonomy.

In addition, we found that the location of osteoarthritic joints conditioned the patient's degree of autonomy ( $r=-.168$ ,  $p < .01$ ). If the affected area was the whole body, the hips or various areas, less autonomy was indicated ( $p < 0.0001$ ). Moreover, the analysis revealed that age conditioned the degree of autonomy, a statistically significant finding ( $r=-.462$ ,  $p=0.0001$ ). Older patients expressed a lower degree of autonomy; the older the person, the smaller the degree of autonomy ( $r=-.498$ ,  $p=0.0001$ ). The only variable related to degree of autonomy was age (Figure 3). We found that cohabitation status (where the participant lived and with whom) was related to the degree of autonomy ( $r=.266$ ,  $p=.0001$ ) and, therefore, with the need for health care.

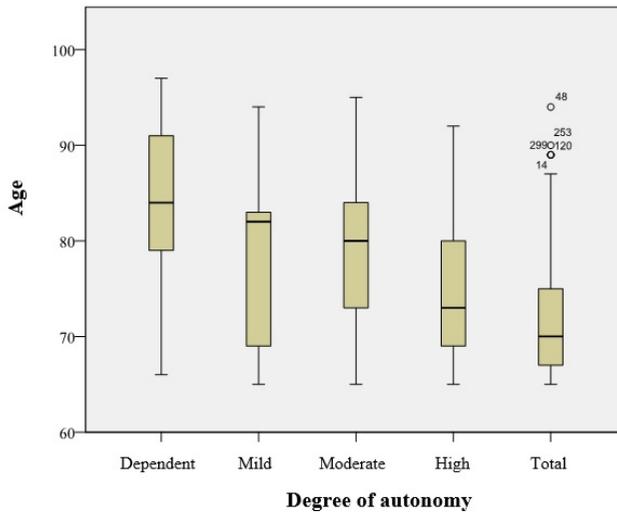


Figure 3. *Self-assessment of degree of autonomy for sampled elderly population in Puerto Rico as relates to age.*

### 3.6. Relationship between cohabitation, gender and quality of life

Cohabitation refers to where and with whom the patient lives. Under this study, it was found that cohabitation conditioned quality of life when taking gender into account (Figure 4). This was more notable among the group of elderly women with osteoarthritis.

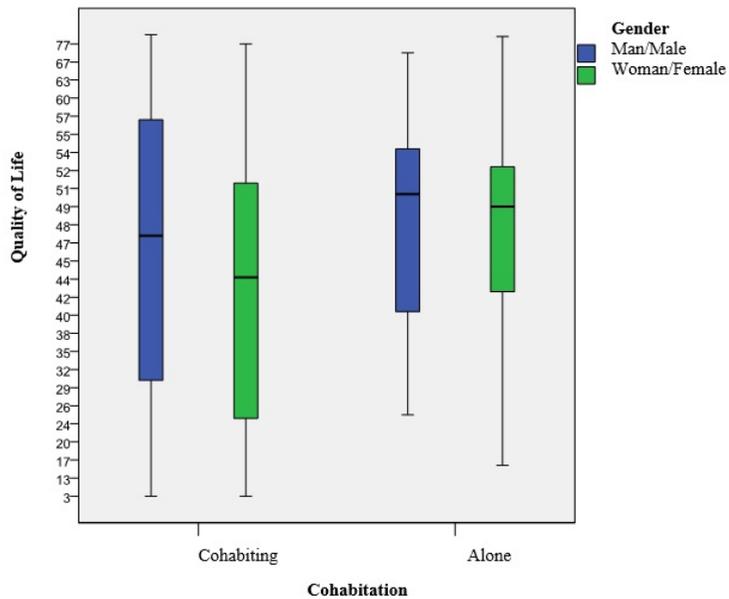


Figure 4. *Quality of life of sampled elderly population in Puerto Rico as relates to gender and cohabitation status.*

Distribution by cohabitation, gender and quality of life reflects no significant correlation for surveyed men, but a significant correlation for women. Women who cohabited as well as those who lived by themselves reflected a poor quality of life. Level of dependence, age, years experiencing osteoarthritis and being female all increased the risk of patients for a decreased quality of life (Table 5).

|                                   | <b>B</b> | <b>S.E.</b> | <b>Wald</b> | <b>Dof</b> | <b>Sig.</b> | <b>Exp(B)</b> | <b>CI 95% for EXP(B)</b> |                 |
|-----------------------------------|----------|-------------|-------------|------------|-------------|---------------|--------------------------|-----------------|
|                                   |          |             |             |            |             |               | <b>Inferior</b>          | <b>Superior</b> |
| Degree of dependence              | 3.081    | .612        | 25.318      | 1          | .000        | 21.774        | 6.558                    | 72.291          |
| Age                               | .060     | .021        | 7.857       | 1          | .005        | 1.062         | 1.018                    | 1.107           |
| Years experiencing osteoarthritis | .395     | .172        | 5.257       | 1          | .022        | 1.485         | 1.059                    | 2.082           |
| Female gender                     | .615     | .268        | 5.260       | 1          | .022        | 1.849         | 1.094                    | 3.127           |
| Constant                          | -5.693   | 1.487       | 14.663      | 1          | .000        | .003          |                          |                 |

Table 5. Multivariate analysis of predicting factors involved in quality of life.

#### 4. Conclusions

The present study reveals a profile of oligo or polyarthritic elderly patients which healthcare is covered by Medicare and are living at a high level of poverty, which does not necessarily allow them to access medicine to appropriately treat this condition and with women's quality of life being more severely affected. According to literature, it is common for the probability of oligo or polyarthritic to increase with age, where more than two joints are affected by the disease (Martínez, 2000). Existing literature points out chronic conditions, such as osteoarthritis, worsen the economic state of elderly people who have this disease, as most of them only have Medicare coverage. Poverty implies two main difficulties for this population: transportation to medical appointments to receive necessary prescriptions and the cost of deductibles in the treatment of osteoarthritis. This in turn implies that elderly patients resort to non-prescription medicine and do not receive proper treatment for their condition. This increases the degeneration of mobility, particularly in the knees and hands, which are the most affected joints in the Puerto Rican osteoarthritic population. The finding that women were most affected by this condition coincides with Martínez (2000), who observed that most elderly

osteoarthritic patients are women; sometimes up to 75% having this disease as compared to men.

The prevalence of the type of osteoarthritis in the elderly population in Puerto Rico is varied. However, the prevalence of osteoarthritis in knees and hand joints were most noteworthy in the studied sample. This coincides with the findings of Dohery et al. (2006) and Walker (2011), who pointed out that osteoarthritis often affects hands, hips and joints. Having osteoarthritis affecting various parts of the elderly patient's body implies a greater impact on their overall health. This is consistent with other studies (Arthritis Foundation, 2014; Castell et al., 2015; Loeser, 2010) which found that the prevalence of osteoarthritis increases with age, being more common in people over 65 and affecting both men and women.

The prevalence of osteoarthritis in the knees was greater in women when compared to men. However, men were more prone to have all areas of the body affected when compared to women. Regarding this point, the Center for Disease Control (CDC, 2015) indicates aging, being a woman and hormonal state (in women) as primary risk factors involved in osteoarthritis predisposition. Moreover, experts on this topic have found that aging and continuing degeneration of joints frequently related to work can have a greater effect on one part of the body than others. Therefore, when one area of the body is more severely affected than another, it can be linked to the type of activity and work the patient with this condition carries out on a regular basis (Ray, 2014; Grupo de Investigadores de Osteoporosis, 2015).

Elderly people in Puerto Rico showed that the fewer years the patient had suffered from the condition, the greater his or her quality of life. Massardo (2009) and Yildirim, Ulusoy & Bodur (2010), among other researchers, found that people with this painful disease tend to be less active, and its effects are not limited to physical health. People who have arthritis also tend to suffer a degradation of their mental health. Osteoarthritis is a disease which involves pain and progressive functional limitation.

In general, the studied group indicated a poor quality of life. Góngora Cuenca et al. (2006) had similar results, indicating that the most affected areas as regard quality of life and the health of elderly affected patients are mobility, personal care, daily chores and pain. None of the surveyed osteoarthritis elderly patients indicated an optimal state of health. Studies carried out by Ambril Murillo, Menor Almargo, Campos-González and Cardiel (2014) point out that the quality of life in patients with osteoarthritis or any other type of arthritis is poor and similar to patients with chronic diseases.

Most of the surveyed participants, regardless of gender, indicated total autonomy or a high level of autonomy. Mora, Araya and Ozols (2004) found a significant correlation between the variable of autonomy, social support and physical activity. Most of the surveyed sample lived with their family or unrelated people. Despite their age and osteoarthritis, the elderly Puerto Rican has to struggle against pain, trying to survive in a postmodern society.

Culturally, elderly people do not like to be considered a “burden” for anyone, so they seek to carry out daily chores by themselves with the least amount of help possible or without any help at all. Elderly people who have led productive lives do not like losing their independence, and maintaining a positive attitude in spite of the disease and continually struggling to overcome limitations helps the osteoarthritic patient deal with this condition. Disease management is oriented towards maintaining the greatest level of independence possible without putting the person at risk (Arthrolink, 2015).

In this study, a significant, positive correlation was found between degree of autonomy and quality of life. The Elderly Affairs Office (“Oficina de la Procuradora de Personas de Edad Avanzada”) (2009) points out that Independence encompasses various aspects, including not just physical but emotional and economic independence, which allows the elderly person to feel useful in a society oriented towards production and which disparages old age. In a study conducted by Sève-Ferrieu (2009), researchers found a correlation between degree of independence, autonomy and quality of life. People feel more satisfied and reflect a higher level of wellbeing when they are able to carry out daily chores by themselves. Particular attention should be paid to the elderly, whose gradual loss of physical and mental capacity implies a negative impact on their quality of life, in order to appropriately attend to their needs.

The quality of life in women is most dramatically affected, whether living alone or cohabiting. Puerto Rican women are at a high risk of being widowed due to their higher life expectancy when compared to men. According to IndexMundi (2015), in Puerto Rico general life expectancy at birth was 79.09, with men averaging 75.46 years and women 82.8 years. The role of women in Puerto Rico, particularly those over 65 years old, is very traditional: women are generally in charge of house maintenance including cleaning and cooking in spite of their old age and ailments, which places them at a higher risk of disease degeneration and of having more bouts of pain (Acosta Belén, 1980). Culturally, men tend to be more passive regarding daily chores and self-maintenance when they get sick, depending more on women or other family members. Therefore, the topic of gender is an important one for future investigations.

The results and conclusions of this study are important for professionals prepared and authorized to provide services to this population in order to provide quality care, as well as for students in training. The demands of aging population, in particular of those with a chronic disease such as osteoarthritis, impose new challenges in the formation of health care students and the professional practice. In a country with a large and living longer elderly population, it is imperative for healthcare professionals and students in nursing and related health fields to be duly trained with the skills and competencies to deal with this growing population. Key areas of rethinking are the care plans, responsibilities, models and interventions that must be reinforced to accomplish healthcare needs of this geriatric sector. It is

important to remember that teachers have a crucial responsibility towards students to communicate a commitment to this population through a realistic, contextualized approach to the needs regarding quality of life and independence affecting the elderly patient with osteoarthritis. This is an ineludible challenge in elderly caregiving.

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## References

- Acosta Belén, E. (1980). *La mujer en la sociedad puertorriqueña*. Río Piedras, PR: Ediciones Huracán.
- Agency for healthcare research and quality. Managing osteoarthritis: Helping the elderly maintain function and mobility. *Research in action*, 4. Retrieved from <http://archive.ahrq.gov/research/findings/factsheets/aging/osteoria/index.html>
- Alonso, J., Prieto, L., & Anto, J. M. (1995). Spanish version of SF-36 Health survey (Health survey SF-36): Un instrumento para la medida de los resultados clínicos. *Revista Medicina Clínica*, 104 (20), 771-776.
- Ambriz Murillo, Y., Menor Almagro, R., Campos-González, I., & Cardiel, M. (2014). Calidad de vida relacionada con la salud en artritis reumatoide, osteoarthritis, diabetes mellitus, insuficiencia renal terminal y población geriátrica: Experiencia de un hospital general en México. *Reumatología Clínica*, 11 (2). doi: 10.1016/j.reuma.2014.03.006
- Arthritis Foundation (2014). *Osteoarthritis*. Retrieved from <http://espanol.arthritis.org/espanol/disease-center/osteoarthritis/>
- Arthrolink. (2015). *El estado de ánimo y su influencia en la osteoarthritis*. Retrieved from <http://www.arthrolink.com/es/vida-cotidiana/consejos-practicos/mantener-el-animo>
- Castell, M. V., van der Pas, S., Otero, A., Siviero, P., Dennison, E., Denkiner, M. & Deeg, D. (2015). Osteoarthritis and frailty in elderly individuals across six european countries: results from the european project on osteoarthritis (EPOSA). *BMC Musculoskeletal Disorders*, 16, 359. Retrieved from <http://doi.org/10.1186/s12891-015-0807-8>
- Center for disease control and prevention, CDC (2015). *Osteoarthritis*. Retrieved from <http://www.cdc.gov/arthritis/basics/osteoarthritis.htm>
- Cid-Ruzafa, J., & Damián-Moreno, J. (1997). Valoración de la discapacidad física: El índice de Barthel. *Revista Española de Salud Pública*, 71 (2), 127-137. Retrieved from [http://www.scielo.org/scielo.php?script=sci\\_arttext&pid=S1135-57271997000200004&lng=en&tlng=es](http://www.scielo.org/scielo.php?script=sci_arttext&pid=S1135-57271997000200004&lng=en&tlng=es)

- Doherty, M., y Lanyon, P., & Ralston, S. (2006). Musculoskeletal disorders. In N. Boon, N. Colledge, B. Walker, et al. (Eds.). *Davidson's principles & practice of medicine* (20<sup>th</sup> edition). London: Churchill Livingstone.
- Góngora Cuenca, Y. L., Friol González, J. E., Rodríguez Boza, E. M., González Roig, J. L., Castellanos Suárez, M., & Álvarez Acosta, R. (2006). Calidad de vida en pacientes con osteoartritis de cadera y rodilla. *Revista Cubana de Reumatología*, 8 (9-10), 23-42.
- Grupo de Investigadores de Osteoporosis (2015) Grupo de Investigadores de Osteoporosis (GRIO). (2015). *La osteoporosis y la osteoartritis: factores de riesgo*. Retrieved from <http://www.grio.org/>
- Iglesias-Parra, M. R., García-Guerrero, A., García-Mayor, S., Kaknani-Uttumchandani, S., León-Campos, Á, & Morales-Asencio, J. M. (2015, April 9). Design of a competency evaluation model for clinical nursing practicum, based on standardized language systems: psychometric validation study. *Journal of Nursing scholarship*, 47 (4), 371-376.
- IndexMundi (2015). Puerto Rico: Expectativa de vida al nacer. Retrieved from [http://www.indexmundi.com/es/puerto\\_rico/expectativa\\_de\\_vida\\_al\\_nacer.html](http://www.indexmundi.com/es/puerto_rico/expectativa_de_vida_al_nacer.html)
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Ley núm. 120 de Puerto Rico, 24 de mayo de 2004. *Ley para declarar el mes de la prevención, tratamiento y cuidado de la artritis*. Retrieved from <http://www.lexjuris.com/lexlex/Leyes2004/lexl2004120.htm>
- Loeser, R. F. (2010). Age-related changes in the musculoskeletal system and the development of osteoarthritis. *Clinics in Geriatric Medicine*, 26(3), 371-386. Retrieved from <http://doi.org/10.1016/j.cger.2010.03.002>
- Lopategui Corsino, E. (2013). Prescripción de ejercicio - delineamientos más recientes: American college of sports medicine (ACSM) - 2014. *Saludmed.com: ciencias del movimiento humano y de la salud*. Retrieved from <http://www.saludmed.com/rxejercicio/rxejercicio.html>
- Martínez, M. E. (2000). *Diagnóstico diferencial monoartritis y poliartritis*. Retrieved from [http://escuela.med.puc.cl/publ/reumatologia/apuntes/19\\_Diagnostico.html](http://escuela.med.puc.cl/publ/reumatologia/apuntes/19_Diagnostico.html)
- Massardo, L. (2009). *Artritis reumatoide. Apuntes de reumatología*. Retrieved from <http://escuela.med.puc.cl/publ/apuntesreumatologia/artritisreumatoidea.html>
- Mora, M., Araya, G., & Ozols, A. (2004). Perspectiva subjetiva de la calidad de vida del adulto mayor, diferencias ligadas al género y a la práctica de la actividad físico recreativa. *Revista MHSalud*®, 1 (1). Retrieved from, <http://www.redalyc.org/pdf/2370/237017928002.pdf>
- National institute of arthritis and musculoskeletal and skin diseases. (2013). *Handout on Health: Osteoarthritis*. Retrieved from [http://www.niams.nih.gov/Health\\_Info/Osteoarthritis/default.asp](http://www.niams.nih.gov/Health_Info/Osteoarthritis/default.asp)

- Oficina de la procuradora de las personas de edad. (2009). *US Bureau of the census, international data base. Avanzada*. Retrieved from <http://www2.pr.gov/agencias/oppte/Documents/Areaestadistica/Perfil2010.pdf>
- Polit, D. F. & Tatano, C. (2006). *Essentials of nursing research*. (6<sup>th</sup> Ed.). Lippincott Williams & Wilkins.
- Ray, C. (2014). *Causas de la osteoartritis y artritis de la columna vertebral*. Retrieved from <http://www.spine-health.com/espanol/artritis-y-osteoartritis/causas-de-la-osteoartritis-y-artritis-de-la-columna-vertebral>
- Ríos Reyes, A. (1999). *Osteoartrosis*. Retrieved from [http://www.oocities.org/amirhali/\\_private/osteoartrosis.htm](http://www.oocities.org/amirhali/_private/osteoartrosis.htm)
- Sève-Ferrieu, N. (2009). Independencia, autonomía y calidad de vida: Análisis y evaluaciones. *EMC - Kinesiterapia - Medicina Física*, 30 (1), 1–15.
- Walker, J. (2011). Management of osteoarthritis. *Nursing Older People*, 23 (9), 14-19. <http://dx.doi.org/10.7748/nop2011.11.23.9.14.c8778>
- Yildirim, N., Filiz Ulusoy, M. & Bodur, H. (2010). The effect of heat application on pain, stiffness, physical function and quality of life in patients with knee osteoarthritis. *Journal of Clinical Nursing*, 19, 1113–1120.



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