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ARAŞTIRMA / RESEARCH

Pain and autonomy level of the elderly with knee osteoarthritis in Central Anatolia

Orta Anadolu'da diz osteoatriti olan yaşlı bireylerin ağrı ve otonomi düzeyleri

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Abstract

Purpose: The aim of this study was to determine the pain and autonomy levels of the elderly with knee osteoarthritis.
Materials and Methods: The descriptive study was conducted with 147 patients who consulted the Physiotherapy and Rehabilitation-Orthopedics Clinic of a Research and Application Hospital in a city center The data were obtained by using information form, visual analog scale and functional autonomy measurement system.
Results: A significant, moderate negative relationship was observed between the age variable, the sub-dimension of the scale and the Functional Autonomy Measurement System. When the autonomy level of the patients with knee osteoarthritis was evaluated, it was seen that the participants in the 65-74 age group had 1.28 times better autonomy levels compared to those in the 75 and above age group. The study revealed a significant, weak negative relationship between the duration of the illness and daily activities, mental functions and functional autonomy measurement system score averages.
Conclusion: It was found that the elderly with knee osteoarthritis have lower levels of autonomy and being single, low education level, advanced age, and increased duration of illness affecting the level of autonomy.
Keywords: Knee osteoarthritis, geriatrics, pain, autonomy.

Öz

Amaç: Bu çalışmanın amacı diz osteoatriti olan yaşlı bireylerin ağrı ve otonomi düzeylerini belirlemektir.
Gereç ve Yöntem: Bu tanımlayıcı çalışma, bir şehir merkezinde bulunan araştırma ve uygulama hastanesi fizik tedavi ve rehabilitasyon- ortopedi polikliniklerine başvuran 147 birey araştırmanın örneklemi oluşturmuştur. Veriler, bilgi formu, visual analog skalası ve otonomi değerlendirme ölçeği kullanılarak toplanmıştır.
Bulgular: Bireylerin yaş değişkeni ile ölçeğin alt boyut ve otonomi değerlendirme ölçeği puanları arasında orta düzeyde ve negatif yönde anlamlı bir ilişki vardır. Osteoartirtli yaşlıların otonomi düzeyi incelendiğinde, 65-74 yaş grubunda yer alan yaşlıların 75 yaş ve üstü yaşlılara göre otonomi düzeylerinin 1.28 kat daha yüksek olduğu belirlenmiştir. Bireylerin hastalık süresi ile günlük yaşam aktiviteleri, zihinsel fonksiyonlar ve otonomi değerlendirme ölçeği puan ortalamaları arasında zayıf düzeyde negatif yönde ve anlamlı bir ilişki vardır.
Sonuç: Osteoartriti olan yaşlıların otonomi düzeylerinin düşük olduğu ve bekar olma, düşük eğitim düzeyi, ileri yaş, artmış hastalık süresinin otonomi düzeyini etkilediği belirlenmiştir.

Anahtar kelimeler: Diz osteoartirit, yaşlı, ağrı, otonomi,.

INTRODUCTION

Autonomy includes the activities of daily living (ADL), mobility, communication, mental functions and instrumental activities of individuals and refers to the independent undertaking of these activities by the individuals[1]. Age specific problems of the elderly as well as conditions like being hospitalized, being immobile and fragile affect the health and functional independence of the elderly negatively, thus leads to inability to engage in daily activities, increase pain and

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reduction in autonomy[2,3]. A study conducted with the elderly (Mean age was 72.4±5.4) revealed that they were dependent on others in activities like having a bath, transportation and shopping[4]. Aylaz, Güneş and Karaoğlu found that the elderly were dependent in terms of using telephone, getting on vehicles and doing shopping[5]. One of the most significant factors leading to loss of autonomy in the elderly is immobility. According to the literature, more than half of the individuals above 65 years have sedentary lifestyle[6,7]. One main reason behind immobility in the elderly is osteoarthritis (OA), which is a musculoskeletal disease. It has been increasing in prevalence, and thus, becoming an economic burden on the societies. As the illness leads to pain and stiffness in the joints it affects, daily activities of the patient decreases and functional disabilities occur. Moreover, the symptoms decrease the willingness of the patient to move. The studies have shown that the elderly with OA are less mobile than the healthy individuals[8,9]. According to the US physical activity report, the majority of the people with knee OA (male 40.1%, female 56.5%) are inactive[10]. OA is a serious chronic disease which may affect many of the joints in the body. Gümüş and Ünsal revealed that individuals are most dependent on others in continence, bathing, shopping, using of telephone and getting on vehicles, respectively[11].

Reduction in autonomy and incresead pain in the elderly leads to increase in dependence on others, decrease in the quality of life and increase in cost (hospital and medicine) and mortality. Boltz et al. reported that a majority of patients aged 65 and over lost more than 50% of their ability to perform their ADL post-hospitalization when they were previously able to perform all their ADL. Moreover, the daily activities of the elderly are limited, and their independent functions gradually become half-dependent or dependent[12]. The complications that occur as a result of these conditions cause the elderly to go to a hospital again, which refers to a vicious circle.

For all these reasons, it is necessary to make a comprehensive geriatric evaluation, which also includes the autonomy and pain of the patient. Functional evaluation, which is a part of comprehensive geriatric evaluation, is conducted to identify the effect of an acute or chronic illness on the elderly functions. It is possible to determine the functions and pain, obstacles and disabilities of the elderly about activities of daily living, mobility, communication, mental functions and instrumental daily activities through autonomy measurement[13,14].

Such an evaluation, enables nurses to effectively plan and manage the care given to the elderly with OA and to decrease the hospital cost and elderly to go to hospital again. In line with these objectives, nurses should aim to improve the autonomy of the individual, thereby helping the individual to look after himself, meeting his needs and maximizing his life quality and satisfaction during the process[15-18].

The present study aims to search for the autonomy and pain levels of the elderly with OA, the relationship between two and factors affecting these variables.

MATERIALS AND METHODS

This study was designed as a descriptive. This study was conducted with individuals who consulted between January 25 -June 23, 2017 at Physiotherapy and Rehabilitation-Orthopedics Clinic of a Research and Application Hospital in a city center. There was a total of 178 consulted OA patients the hospital during study period. No sample was chosen and all subjects that accepted participation and met study inclusion criteria were included in the sample. The sample was composed of 147 (%82.5) individuals who gave their oral and written consent to take part in the study.

The individuals who were diagnosed OA by a doctor according to the criteria of American Rheumatology Association (ARA), were sufficient to answer the research questions, above 65 years, had OA treatment for at least 6 months, accepted verbal and written consent to participate were included in the study. Patients who had any psychiatric disease were excluded from study. There were 31 subjects that did not meet the inclusion criteria (20 subjects had been on treatment for less than 6 months, 5 subject were not sufficient to answer the research questions, and 6 refused to participate).

In order to carry out the study written permission was taken Bozok University Faculty of Medicine and Bozok University Clinical Research Ethics Committee (the decision numbered 20.01.2017/17 and dated 21.01.2017). Based on the principle of willingness to participate in the study, oral and written consent was obtained from the participants. In the study, ethical principles outlined in the

Declaration of Helsinki were followed and personal information of the participants was kept confidential.

Data collection

The data were obtanined by using information form, visual analog scale and functional autonomy measurement system (SMAF). The data was collected through face to face interviews with the participants. Each interview lasted about 20-30 minutes.

Visual Analog Scale

Visual Analog Scale, which was developed by Price et al. in 1983, was used to evaluate the severity of pain. In order to make this evaluation, patients were asked to evaluate their pain with a score between 0 and 10 thinking of the most severe pain they had experienced thus far. The level of the most severe pain the individual feels were marked on the scale. The numerical value the individual marks was considered as the pain score[19].

Functional Autonomy Measurement System

Functional Autonomy Measurement System (SMAF) is based on the concepts of deficiency and disability defined in the WHO's International Classification of Impairments, Disabilities, and Handicaps (ICIDH). [1,20] This scale determines whether an elderly individual is at risk of losing functional independence. Tuna & Çelik (2012) conducted a validity and reliability study of this scale for Turkey. The adapted scale consists of items related to various subscales, such as ADL (19 functions), communication (3 functions), and mental functions (3 functions). Cronbach's alpha coefficient value was 0.95 for the disability part of the adapted Turkish scale. For each item, the disability is scored on a 5-point scale: 0 (independent), [-0.5 (with difficulty), -1 (needs supervision), -2 (needs help)] and -3 (dependent). The total disability score of the scale is obtained through the sum of all function scores. The SMAF ranges from -75 (lowest) to 0 (highest). If the total score is less than -5, the elderly individual is at risk of losing functional independence. The ADL subscale ranges from -57 (lowest) to 0 (highest). The communication subscale ranges from -9 (lowest) to 0 (highest). The mental functions subscale ranges from -9 (lowest) to 0 (highest)[1]. In our study, Cronbach alpha coefficient of the scale was 0.94.

Research Variables; the independent variables of our study were age, gender, marital status, level of education, occupation and the duration of disease, while the dependent variables were pain and functional autonomy measurement system scores.

Data analysis

Statistical Package for Social Science (SPSS) 21 was used to analyze the data. The data were normally distributed according to the Shapiro Wilk test applied. It was determined that normal distribution data. Numbers, percentage, mean and standard deviation were used. In order to compare two groups, independent t test was used. For the comparison of more than two groups, one-way ANOVA was used. Pearson correlation was made to determine the relationship between age, autonomy level and pain. The effect of the four variables which were derived from the study and which were determined to have a relationship with the autonomy level of the elderly was evaluated with logistic regression analysis[21]. Autonomy level as the dependent variable was modeled with age, duration of the disease, marital status and level of education as the predictor (effect) variable and the analysis was conducted. For this analysis, Functional Autonomy Measurement System score range was grouped into two as autonomy adequate ($\geq$-5) and autonomy inadequate (<-5). The results were found significant at 95% confidence interval ($p<0.05$).

RESULTS

The mean age of the participants was 69.2+6.3 years. The participants 61.2% were female, 83.0% were married and 44.2% had primary school degree. The majority (78.9%) did not work, and the mean of the duration of their illness was 7.9+5.8 years. The mean pain severity level of the participants, as evaluated by the VAS, was 6.3+1.8 (Table 1).

The patients' SMAF mean score was -16.7+13.8 (min=-52.5, max=0), activity of daily living (ADL) subscale mean score was -14.3+12.4 (min=-45.5, max=0), communication subscale mean score was -0.9+1.1 (min=-6, max=0), and mental functions subscale mean score was -1.5+1.3 (min=-6, max=0) (Table 2).

ADL, communication and SMAF scores of the 65-74 years old participants were higher than the other groups ($p<0.05$). ADL, communication, mental function and functional autonomy measurement system of the single participants were lower than the married ones, and the difference between these two groups were statistically significant ($p<0.05$).

Table 1. Defining characteristics of the individuals

Variables (n=147)	n	%
Age	69.2+6.3 years	
Gender		
Female	90	61.2
Male	57	38.8
Marital Status		
Married	122	83.0
Single	25	17.0
Level of Education		
No education	53	36.1
Primary School	65	44.2
High School and above	29	19.7
Employment Status		
Working[1]	31	21.1
Not working[2]	116	78.9
Duration of Disease	7.9±5.8 years	
Visual Analog Scale (VAS)	6.3±1.8	

[1]Working as a farmer or a worker [2] Housewives or retired

Table 2. The mean functional independence scores of patients (n=147)

Subscales of SMAF[1]	Mean+SS	Min.	Max.
Activity of daily living	-14.3±12.4	-45.5	0
Communication	-0.9±1.1	-6	0
Mental functions	-1.5±1.3	-6	0
Total score	-16.7+13.8	-52.5	0

[1] **SMAF:** Functional Autonomy Measurement System

The participants without any education level had lower ADL, communication, mental function and SMAF scores compared to the participants with other education levels, and the difference between these two groups were statistically significant ($p<0.05$). There was no significant difference between the individuals in terms of their SMAF score averages based on gender and employment status ($p>0.05$) (Table 3) A significant moderate negative relationship was found between age of the participants and sub-dimension of the scale and SMAF scores ($p<0.001$). It was seen that as the age of the participants increased, their ADL, communication, mental function and functional autonomy measurement system scores decreased. A significant weak negative relationship was observed between the duration of illness and ADL, mental functions and functional autonomy measurement system score averages ($p<0.001$). The results revealed that as the duration of the illness increased, ADL, mental function and functional autonomy measurement system scores levels decreased. There was no significant relationship between the duration of illness and communication scores ($p>0.05$). Furthermore, there was no significant relationship between the VAS scores of the participants and the scores pertaining to the four items of the scale ($p>0.05$) (Table 4).

Table 3. The comparison of SMAF score averages according to the defining characteristics

Variables (Mean±SS)	ADL[2]	Communication	Mental Functions	Total[1] Score
Age Groups*				
65-74 years old	-12.36+10.91	-0.80+1.2	-1.35+1.24	-14.52+12.28
75-84 years old	-24.12+15.06	-1.33+1.07	-2.0+1.27	-27.45+15.46
85 years and older	-26.95+14.40	-1.70+1.94	-2.10+1.66	-30.75+16.55
p*	0.000	0.021	0.066	0.000
Gender				
Female	-14.7±12.2	-0.8±1.1	-1.5±1.3	-17.0±13.5
Male	-13.8±12.7	-1.0±1.2	-1.4±1.3	-16.2±14.4
p**	0.669	0.292	0.698	0.739
Marital Status				
Married	-12.9±11.5	-0.8±1.0	-1.3±1.2	-15.0±12.8
Single	-21.0±14.3	-1.4±1.4	-2.0±1.5	-24.5±15.9
p**	0.003	0.010	0.020	0.002
Level of Education				
No education	-19.8±13.6	-1.0±1.3	-1.8±1.4	-22.6±15.0
Primary School	-11.5±10.0	-0.9±1.1	-1.4±1.2	-13.8±11.2
High School and above	-10.6±11.5	-0.8±1.0	-0.9±1.2	-12.2±13.2
p*	0.000	0.653	0.006	0.000
Employment Status				
Working	-14.7±12.3	-0.9±1.1	-1.4±1.3	-17.1±13.7
Not working	-12.9±12.7	-0.8±1.1	-1.5±1.4	-15.2±14.33
*p***	0.467	0.561	0.771	0.501

* One-way Anova Test. ** Independent t test. [1] **SMAF:** Functional Autonomy Measurement System;[2] Activities of Daily Living

Table 4. Correlation matrix for age, duration of disease and pain score, and autonomy measurement system

Characteristics	ADL[2]		Communication		Mental Functions		Total SMAF[1] Score	
	r_p	p	r_p	p	r_p	p	r_p	p
Age	-0.455	<0.001	-0.228	<0.005	-0.296	<0.001	-0.455	<0.001
Duration of Disease	-0.299	<0.001	-0.020	0.809	-0.324	<0.001	-0.301	<0.001
VAS [3]	-0.057	0.495	-0.056	0.504	-0.114	0.171	-0.066	0.426

rp= Pearson correlation 1 SMAF: Functional Autonomy Measurement System 2 Activities of Daily Living 3 Visual Analog Scale

When the autonomy level of the patients with OA was evaluated, it was seen that the participants in the 65-74 age group had 1.28 (odds ratio) times better autonomy levels compared to those in the 75 and above age group ($p<0.05$). Furthermore, the results revealed that the duration of the illness, marital status and level of education were not very significant in the model (Table 5).

Table 5. Factors influencing the level of functional independence

Variables	Regression coefficient B	Standard error S.E.M	Wald	*p* Value	Odds Ratio (Exp B)
Age (Ref.75 and above)	.250	.114	4.813	0.028	1.284
Duration of disease (continuous variable)	-.043	.046	.861	0.353	.958
Marital status (Ref.single)	.863	.765	1.275	0.259	2.371
Level of Education (Ref.no education)	-.344	.357	.927	0.336	.709
Fixed	-14.727	7.687	3.671	0.062	.000

*Dependent variable: autonomy level(high:0;low:1), sd 1 for logistic regression; -2 log-likelihood:105.353

DISCUSSION

Physiological and psychosocial change occurring together with age increase the risk that elderly individuals will lose their functional independence. Osteoarthritis is an illness which has an adverse effect on the physical, psychological and social life of the elderly[22]. Musculoskeletal system degenerations that are associated with OA deteriorate the autonomy of the elderly even further. Reduction in autonomy and increased pain leads to muscle weakness, immobility and obesity in the elderly. All these conditions accelerate the degenerative process and decrease the life quality of individuals[23,24]. Our study revealed that the elderly with OA have lower levels of autonomy have disabilities in terms of the sub-dimensions of the scale (activities of daily living, communication and mental functions). These findings coincide with the findings in the literature [23-25]. Karadağ and Kalkan reported that, elderly were most dependent were managing the budget, doing the laundry, and cleaning the house[26]. Therefore, the evaluation of the functional condition of elderly patients with OA is very important. Elderly people have difficulty in performing daily living activities due to physical condition in old age. The old individuals who are seen as passive and only a consumer lose his/her position of being a status symbol in the traditional family model and also his/her autonomy[6,7] One of the most important responsibilities of geriatric nurses is to increase the quality of life by ensuring the independence of the elderly. The results of the study indicated that it is necessary to detect the early changes in the musculoskeletal system of the elderly with OA through a comprehensive geriatrics evaluation, to plan the nursing care, and to increase the self-care and self-efficacy of the elderly accordingly.

Advanced age is the most significant risk factor in the development of OA. Moreover, as age increases, the elderly with OA experience some changes in their muscles and the ability to move the joints decreases, which eventually leads to a decrease in the autonomy levels of the elderly[7,10,27]. Our study found that as age increases, autonomy levels decrease. Furthermore, the regression analysis revealed that the 65-74 age group had 1.28 times higher autonomy level than the 75 and above age group. Aydın et al. also found that the individuals with advanced age are more dependent on others[4]. Çivi et al. revealed that the elderly who are 75 and above have more difficulty in daily life activities compared to the people in the other age groups[26]. These results point out that the elderly have lower levels of autonomy. Combined

with the duration of the illness, physical disabilities increase and the ability to do self-care is lost, which all affect the autonomy of the elderly [22,28]. Our study demonstrated that as the elderly have longer periods of OA, their daily life activities, mental functions and autonomy levels decrease. Similar to our study, Arslantaş et al.'s (2009), which looked at the quality of life and ADL of elderly individuals living in rural areas with a mean age of 71.5 (n=1301), found that shopping, preparing meals, and using public transportation were the functions requiring the most dependence[29].

It is known that marital status of the elderly affects their autonomy levels. The presence of somebody at home who helps care for the elderly and who provides social support enables the patient to deal with the symptoms of the disease and the disabilities it leads to more easily[10,30]. In our study, it was found that the single elderly have lower scores for daily life activities, communication, mental functions and functional autonomy measurement compared to the married elderly, and the difference between these two groups is statistically significant. Another study also indicated that the people with a large family have higher levels of social support compared to those who live alone. Boylu ve Günay' study (2018) findings shown that the level of perceived social support is an important predictor of life satisfaction[31]. When the elderly with OA have support from their spouses, the burden of the disease is reduced; their autonomy increases; and they can deal with the symptoms more easily[32].

As the level of education increases, health literacy and self-confidence also increase and people can deal with the symptoms more effectively[4,33]. The elderly with OA without education had lower scores for daily life activities, mental functions and functional autonomy measurement compared to the elderly with other education levels, and the difference is statistically significant. The studies conducted so far have shown that the individuals with a low level of education and with degenerative joint disease have higher levels of functional disability[34,35]. When education level is low, individuals do insufficient physical activity, have unhealthy nutrition, use their body mechanics inappropriately, and comply less to the treatment.

Our study revealed that the elderly with OA have lower autonomy levels and being single, low education level, advanced age, and increased duration of illness affecting the level of autonomy. Based on these results, primary, secondary and tertiary prevention principles must be taken into account and nursing care must be planned accordingly. Furthermore, the elderly should be provided with consultancy service to increase their autonomy levels by improving their self-care and self-sufficiency. Prolonged illness duration leads to a decrease in the functional independence.

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