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Comparison of the quality of life for healthy active and sedentary elderly and with osteoarthritis

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ABSTRACT

Chronic diseases such as osteoarthritis, due to a progressive course often are debilitating and affected quality of life for the elderly. Thus, preventive interventions to reduce the risk of progression of osteoarthritis in the elderly is particularly importance, because except the impact on elderly quality of life, will reduce the economic burden on society and family. This study compared the quality of life in elderly with osteoarthritis and healthy one. 160 elderly with osteoarthritis (80 active elderly and 80 sedentary elderly) referred to the rheumatology portions of Tehran ShahidBeheshti University hospitals and 160 healthy elderly (80 active elderly and 80 sedentary elderly) voluntarily filled the demographic characteristics, YAL physical activity and 36 question the quality of life questionnaires. Multivariate analysis of variance showed that there are significant differences in quality of life dimensions in four groups (active and sedentary healthy elderly and active and sedentary elderly with osteoarthritis ($P < 0.05$)). The Bonferroni post hoc test results showed that active healthy elderly significantly had a high quality of life rather than other 3 groups. also the results showed that active elderly with osteoarthritis had a better quality of life rather than sedentary elderly with osteoarthritis and sedentary healthy one and the quality of life in sedentary elderly with osteoarthritis was bad ($P < 0.05$). The results showed that participation in physical activity increase the quality of life in healthy elderly and elderly with osteoarthritis and with training and promoting physical activity can be provided the manner of consistent of elderly with osteoarthritis in this dysfunction and play an important role in improvement of quality of life and health level in society.

Key words: elderly, quality of life, osteoarthritis, physical activity.

INTRODUCTION

elderly is a crucial juncture of life and attention to social issues and needs at this stage is necessity. Aging phenomenon in global population due to decreasing of the mortality from medical advances, health, education and increased life expectancy and survival rate, is so important that lack of attention to it, gets the humanitarian community unto complex problems in near future (1). Given the rapidly increasing in number of elderly people, health problems, providing their health and welfare in the community, each day finds new dimensions and width. What today knowledge does, is not only the increasing the life, it should be noted that additional years of life are spent in comfort and physical and mental health, if these situations are not provided, scientific advances to provide longer life won't have the result (2).

Unfortunately, most people in modern societies wrongly believe that the elderly physical and mental health is independent from the psychological health. The research findings have shown that physical and physiological needs are in interaction with psychological needs and these needs affect each other throughout the lifetime (3). Several studies have shown that with increasing age, increasing the number of chronic diseases and physical and psychological health in elderly falls in the risk, one of these chronic disease is osteoarthritis (4,5).

Osteoarthritis the most common joint worldwide disease. This disease is seen mostly in older people and is a progressive disease that affects the synovial joints and endangers the elderly both psychological and physical health (6). The main problem in osteoarthritis patients is pain (7) that not only considered a traumatic and harmful experience, but inability in its control can have negative impact on patients' quality of life. Cadenna and Vinaccia (2003) and Zakaria (2009) Studies has shown that quality of life in chronic and debilitating disease can be changed. Today is also more marked changes in quality of life from the Health dimension, is an assessment tool to evaluate the impact of any intervention in OA (8,9).

Because of the chronic, a painful and debilitating nature of osteoarthritis has a profound impact on the elderly quality of life. Multidimensional surveying the quality of life has shown that this situation does not only physical limitations, but also affects the other aspects of elderly quality of life, as well as psychological and social function (10).

Research results of Simacha and colleagues (2003), Vanlankveld and colleagues (2003), Wolf and colleagues (2003) and Jakobsoon and colleagues (2002) has shown the quality of life in patients with osteoarthritis has lower level and is undesirable (11, 12, 13, 14). Rezvanian and colleagues (1388) showed that joints pain and stiffness in elderly with osteoarthritis, has progressive growing and can confine the walking ability, climb stairs or fine works and have a negative effect on patients' quality of life (6). Physical disorders and physical symptoms have a direct effect on all aspects of the quality of life. For example, uncontrolled physical problems such as osteoarthritis cause psychiatric problems such as anxiety, depression and despair in the elderly and subsequently the physical symptoms affect the nature of the quality of life (15).

Over the last 20 years, interest to evaluate and improve quality of life of elderly with chronic diseases increased significantly and improve daily function and quality of life in the elderly become a target (16). Based on the negative effects of osteoarthritis on physical, psychological and quality of life of elderly, and given the increasing economic burden on society and family, using the preventive interventions and non-drug modalities to postpone or reduce the risk of disease progression is important (17).

Jordan (2004) in research conducted using the Delphi technique were expressed top Ten Tips on osteoarthritis symptoms, that the first point was the use of non-drug modalities for reducing pain in these patients (18). Many other scientific resources express the first goal of treatment in such diseases is pain decreasing. Since the age of these patients is high, using the drug methods is extremely dangerous (19). The findings of a number of studies indicate that exercise and physical activity can maintain joints mobility at the maximum extent and affective muscles to the movements of those joints have more strength (20). Regular exercise to improve fitness can reduce pain, fatigue and morning stiffness and can affect sense of confidence, stress and depression reduction of patient with osteoarthritis (21-23). The research findings of Abell and colleagues (2005), Bennell and colleagues (2011), Freelove-Charto and colleagues (2007) has shown that exercise and physical activity can increase the quality of life in elderly with osteoarthritis (24-26).

On the other hand, with regard to beneficial effects physical activity on pain reduction and increased the quality of life of elderly, many researches also has shown that physical activity does not always hadn't effect on quality of life of elderly. For example, Mummery and colleagues (2004) and Brown (1992) found that physical activity improves mental health and quality of life of young and middle-aged people however, there are little empirical evidence to confirm the effectiveness of physical activity on improving mental health and quality of life for older people (27,28). Dreher and colleagues (2008), and Sue (2007) also believe that although one of the primary goals of health development is to increase the quality of life in the elderly, in this regard, but there are still doubts if the development of physical ability and increasing of muscle strength can cause or make better the quality of life in other dimensions or not.

Also, Minor and colleagues (1989) and Razavian and colleagues (1388) concluded that exercise has no effect on elderly with osteoarthritis pain decreasing and quality of life increasing (6, 32).

based on controversy in conducted studies results in this regard and due to specific characteristics of elderly and due to different effect of exercise on their lives, especially elderly patients with osteoarthritis (that physically and mentally are more vulnerable than healthy elderly in the community) more research in this stratum of society seems to be necessary. According to the previously conducted researches, which has been shown that exercise and physical activity can be a important remedial modality and without contradiction for elderly patients with osteoarthritis and to be effective to enhance their quality of life, This study aim to compare the quality of life for healthy active and sedentary elderly and elderly with osteoarthritis, referred to rheumatology clinics and wards of Tehran Shahid Beheshti University of Medical Sciences hospitals.

MATERIALS AND METHODS

This research method is a comparative study that conducted in order to compare the quality of life for healthy active and sedentary elderly and patients with osteoarthritis, referred to rheumatology clinics and wards of Tehran Shahid Beheshti University of Medical Sciences hospitals. 160 elderly patients with osteoarthritis (80 active elderly and 80 sedentary elderly) referred to the rheumatology portions of Tehran, ShahidBeheshti University hospitals and 160 healthy elderly (80 active elderly and 80 sedentary elderly) voluntarily filled the demographic characteristics, YAL physical activity and 36 questions the quality of life questionnaires. Firstly the demographic questionnaire that included inclusion and exclusion criteria of the study, demographic data, height, weight, sex, patient history, and use of anti-pain medications, and education level and to measure the quality of life the Short Form 36 questionnaire (Short from 36) was used.

Short Form 36 questionnaire is a standardized questionnaire to measure quality of life for elderly. This questionnaire has 36 questions in 8 dimensions that its dimensions, including general health, physical function, physical and mental performance limitation, sense of vitality, mental health, social and physical pain or physical function. Provided scale in this questionnaire, can scores each of the eight components of health and the two summary dimensions of physical and mental health. Validity and reliability of this questionnaire was confirmed by Montazeri and colleagues (33). To set off for the active and sedentary elderly the YAL physical activity questionnaire was used. Elderly responded to the questionnaire that calculated their activity in past month per hours and energy expenditure based on their activity. After calculating the energy consumption per unit of kilocalories per week then converted to MET. Elderly who have activity with lower than 3000 MET per week as sedentary elderly and elderly that have above 3000 MET physical activity per week regarded as an active elderly (34).

The Kolmogorov Smirnov test (Kolmogorov-Smirov) used for evaluation of normal distribution of variables. the multivariate analysis of variance was used to compare the eight dimensions of quality of life of in four groups of elderly people and to determine differences between paired groups the Bonferroni post hoc test was used for each of the dimensions of quality of life (SPSS software version 16 on a significant level of $P < 0.05$).

RESULTS

Subject's demographic data are summarized in table 1. As shows in this table, the highest percentage of healthy active elderly and active elderly with osteoarthritis are in the age group 60-70 years, the highest percentage of healthy sedentary elderly and sedentary elderly with osteoarthritis are in the age group 71-80 years. Percentage of elderly women is higher than elderly men suffering from osteoarthritis. Percentage of elderly patient suffering from osteoarthritis with diploma and higher diploma in education is less than elderly patient suffering from osteoarthritis with primary education and illiterate.

Table 1. Demographic characteristics of healthy active and sedentary and patient suffering from osteoarthritis

Variable	Healthy active Elderly	Active elderly suffering from osteoarthritis	Healthy sedentary Elderly	sedentary elderly suffering from osteoarthritis
	N=80	N=80	N=80	N=80
Age groups				
60-70 years	43(53.7%)	49(61.2%)	33(41.29%)	34(42.5%)
71-80 years	28(35%)	26(35.2%)	35(43.8%)	39(48.8%)
81<	9(11.25%)	5(6.3%)	12(15%)	7(8.75%)
Sex				
Female	44 (55%)	59(73.7%)	48(60%)	55(67.8)
Male	36(45%)	21(26.3%)	32(40%)	25(31.2%)
education				
Illiterate	5(6.25%)	7(8.75%)	8(10%)	26(32.5%)
Preliminary	8(10%)	14(17.5%)	19(23.75%)	25(31.25%)
Diploma	25(31.25%)	27(33.7%)	32(40%)	18(22.5%)
Over than diploma	42(52.5%)	32(40%)	21(26.25%)	11(13.75%)

Data are based on frequency and percent of frequency.

descriptive statistics (mean and standard deviation) of quality of life components (Physical fitness, physical problems, emotional problems, vitality and happiness, mental health, social function, pain, general health and total quality of life score) healthy sedentary and active elderly and elderly with osteoarthritis presented in table 2. Descriptive statistics showed that healthy active elderly in all variables of quality of life components had higher score and sedentary elderly with osteoarthritis in all variable of quality of life had a lower score. The active elderly with osteoarthritis on quality of life variables were better than sedentary one (Table 2).

Table2. The mean and standard deviation of quality of life components in healthy sedentary and active elderly

	Healthy active Elderly		Active elderly suffering from osteoarthritis		Healthy sedentary Elderly		sedentary elderly suffering from osteoarthritis	
	M	SD	M	SD	M	SD	M	SD
Physical fitness	73.26	51.10	75.69	85.10	61.77	15.68	43.72	9.41
physical problems	68.62	98.4	58.88	39.8	46.95	5.77	38.80	4.45
emotional problems	65.41	8.15	60.61	10.29	58.23	4.65	42.77	12.26
vitality and happiness	66.74	75.4	70.70	45.8	63.75	13.51	43.95	9.75
mental health	62.96	40.15	66.57	90.8	55.81	11.51	42.45	8.91
social function	60.85	10.07	55.16	7.89	52.51	12.46	47.70	9.93
pain	74.58	13.06	70.86	9.83	68.71	13.62	47.93	12.41
general health	61.93	5.71	56.52	7.20	53.52	6.79	44.32	8.37
total quality of life	67.04	12.79	62.52	12.95	57.66	16.27	43.95	15.18

Data is based on Mean and Standard Deviation.

In order to determine significant difference in quality of life components in four study groups the multivariate analysis of variance (MANOVA) was used (Table 3). Results showed that the quality of life components (Physical fitness, physical problems, emotional problems, vitality and happiness, mental health, social function, pain, general health and total quality of life score) in four groups of elderly people had a significant difference ($P < 0/05$) and healthy active elderly and elderly suffering from osteoarthritis had a higher quality of life than healthy sedentary elderly and elderly with osteoarthritis.

Table3. The multivariate analysis of variance (MANOVA) for quality of life components in healthy elderly and elderly suffering from osteoarthritis

	Mean square	Df	F	Sig	Eta
Physical fitness	13889.78	316	98.70	0.0001	0.48
physical problems	9634.37	316	260.84	0.0009	0.71
emotional problems	7665.88	316	88.98	0.021	0.45
vitality and happiness	1489.97	316	159.50	0.001	0.60
mental health	6089.16	316	75.98	0.012	0.41
social function	2404.37	316	23.01	0.016	0.17
pain	11419.28	316	102.28	0.003	0.49
general health	4351.63	316	86.59	0.005	0.45
total quality of life	7983.54	316	385.56	0.001	0.78

F=38.44, P<0.05 based on Lambda Wilkes.

DISCUSSION

Ageing is a crucial stage of life and attention to social issues and needs at this stage is a necessity. Aging phenomenon in global population due to decreasing of the mortality from medical advances, health, education and increased life expectancy and survival rate, is so important that lack of attention to it, places the humanitarian community in the near future will be much more complex problems

of these chronic disease is osteoarthritis. Osteoarthritis is the most common joint worldwide disease. This disease is seen mostly in older people and is a progressive disease that affects the synovial joints and endangers the elderly both psychological and physical health. This disease can have a significant effect on quality of life so that undesirable quality of life, treatment, rehabilitation programs and follow-up treatment can be difficult (4,8,35).

Several symptoms, including pain, fatigue, inability to movement and destroy the cartilages and joints tissue could be involved the quality of life of elderly with osteoarthritis and can disrupt quality of life (3,6,9). On the other hand, many researches showed that the exercise and physical activity can increase the elders' quality of life and reduce pain in osteoarthritis patients (17,21,22,24). This study aim to compare the quality of life for healthy active and sedentary elderly and active and sedentary patients with osteoarthritis, referred to rheumatology clinics and wards of Tehran Shahid Beheshti University of Medical Sciences hospitals. Results showed that the quality of life components (Physical fitness, physical problems, emotional problems, vitality and happiness, mental health, social function, pain, general health and total quality of life score) in four groups of elderly people have a significant difference ($P < 0/05$) and active elderly with osteoarthritis has a higher quality of life than sedentary elderly with osteoarthritis.

The results in this regard are consistent with the results of Sawatzky and colleagues (2007), Abell and colleagues (2005) and Free love-Charton et al (2007). The Possible reasons for the positive effect of physical activity on quality of life can be the positive psychological effects such as self-esteem, feelings of hope and higher self-esteem, stronger social relationships, ability to adapt and cope with problems (23,24,26).

Farr and colleagues (2008) and Shakooret al. (2007) showed that exercise therapy via strengthening the muscles around the joint and reduced pressure on it is effective in reducing pain and increasing joint range of motion and improving physical function in these patients and pain reducing in osteoarthritis patients, leading to reduced physical problems, vitality, and increase the quality of life (37,38).

Freelove-Charton et al. (2007) in the research stated that exercise and physical activity will have beneficial effects in improving aerobic capacity and strength and stamina and functional capacity of patients with osteoarthritis, so that it can reduce depression and psychological problems and also to reduce fatigue in these patients (26). Ettinger and colleagues (1997) in their study concluded that due to muscle weakness, and joint ligament loose in disease progression over time, despite the strength of the joint is most important factors in reducing the pain and strengthen muscles and disability and improve quality of life (22).

Bennell and colleagues (2011) and Shakooret al. (2007) in own research emphasized on the role of sport as an effective factor reducing pain in patients with osteoarthritis (25,38).

Iwamoto and colleagues (2011) in their research stated that the exercise improve flexibility and mobility, improve cognitive function and improving psychological adjustment and functional adaptation that has important role in elderly quality of life improvement (39). The results of the research are not consistent with Mummery and colleagues (2004) and Brown (1992) results (28,24). Based on the results of their research, physical activity had no significant effect on mental health and its dimensions. Some researchers believe that physical complications of the disease have been numerous and the more important one of them named chronic pain, impaired physical stimulation, deformity and fatigue. In addition to physical effects, psychological and emotional problems such as a change in role, mental disorders in the impaired body image sense of oneself and problems in confidence of the patient's should be considered (38,39). The physical activity and exercise modalities can improve the self-worth, independency, self-care, self-esteem and etc. in elderly and strengthen the sense of ability and power of resistance (22,23,26).

In this regard, Iwamoto and colleagues (2011) have stated that receive support, positive attitude towards the disease, having the confidence and self-control on health are important issues affecting the quality of life in elderly (39). Also, results showed that quality of life scores in the active elderly is higher than sedentary one; this indicates the higher quality of life of elderly people that are active. This part of the obtained results was similar with the results of Sawatzky and colleagues (2007) (23).

Their results showed that exercise has a positive effect on quality of life of healthy older people. Possible reasons for the positive effect of physical activity on quality of life can be justified as that physical activity reduces the activity limitations, increase more independency, increase the role and life happiness and successful and finally lead to increased quality of life and well-being in the elderly population.

Therefore, it can be inferred that such elderly with lower physical health and quality of life by addressing physical activity as a favorable environment can somewhat reduce own personality conflicts and achieve better mental and social development (33). The results of the research aren't consistent with results of Dreher and colleagues (2008), and Sue (2007) and Brown (1992) (30, 31, 28).

Perhaps cultural differences and level of elderly physical activity in present study and in the mentioned investigation is one of the causes of controversy in the different studies.

Biological interactions decrease with age increasing and muscles become thin and weak. In fact these changes can limit the full performance of the elderly, although these changes will vary from person to person (39). The best predictor for showing the level of independence and quality of life for older peoples, is studying their physical activity and physiological one. Any type of pressure, deficit or diseases that reduce the elderly people physical activity can reduce the individual ability and Independent actions in doing individual works and ultimately will lead to reduced quality of life of elderly people (38). The present results also confirm this.

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