

DOI: 10.5455/msm.2017.29.272-275

Received: 13 August 2017; Accepted: 25 October 2017

© 2017 Emira Svraka, Muris Pecar, Amila Jaganjac, Amra Macak Hadziomerovic, Eldad Kaljic, Almir Kovacevic

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ORIGINAL PAPER

Mater Sociomed. 2017 Dec; 29(4): 272-275

Physical Therapy in Elderly Suffering from Degenerative Diseases

Emira Svraka¹, Muris Pecar¹, Amila Jaganjac¹, Amra Macak Hadziomerovic¹, Eldad Kaljic¹, Almir Kovacevic¹

¹Faculty of Health Studies, University of Sarajevo, Bolnička 25, Sarajevo, Bosnia and Herzegovina

Corresponding author: prof Emira Svraka, PhD. Faculty of Health Studies, University of Sarajevo, Bolnička 25, Sarajevo, Bosnia and Herzegovina. ORCID ID: <http://www.orcid.org/0000-0002-7015-4254>. E-mail: emira.svraka@fzs.unsa.ba

ABSTRACT

Introduction: Osteoarthritis of the joints (osteoarthritis or arthritis) represents the largest group of rheumatic diseases. Within rheumatic diseases 50% are degenerative rheumatic diseases, 10% inflammatory and 40% extra-articular. **Goal:** To determine the modalities of physical therapy for elderly with degenerative diseases. **Material and methods:** The study is retrospective-prospective and descriptive. The survey conducted included 25 patients with degenerative diseases of the musculoskeletal and nervous systems in Gerontology Center in Sarajevo, from May 1, 2014- April 30, 2015. As research instruments were used: Questionnaire for users of physical therapy in Gerontology Center in Sarajevo, self-developed, visual-analog scale to assess pain and patient records. **Results:** Of the total number of patients with degenerative diseases (25), 10 (40%) were male and 15 (60%) were female. The most common degenerative disease is knee osteoarthritis which had 11 patients (29%), 3 males and 8 females. From physical therapy modalities in the treatment of degenerative diseases at the Gerontology Center in Sarajevo, kinetic therapy was administered to all patients, followed by manual massage and TENS in 15 cases (60%). From twenty-two patients, who completed a questionnaire, 11 (50%, 2 male and 9 female) rated their health as poor. Seven patients (32%, 3 male and 4 female) assessed their health as good. Three patients (14%, 2 male and 1 female) rated their health as very poor, and one patient (4%, 1 male) rated its health as very good. **Conclusion:** The Research Physical therapy in elderly with degenerative diseases is a pilot project, which highlights the need for: Conducting research for a longer time period, with a larger sample; Quality of keeping health records; Implementation of a continuous evaluation of functional status and; Stricter control for optimal effectiveness of physical therapy in order to improve the quality of life of elderly patients.

Keywords: elderly, degenerative diseases, physical therapy.

1. INTRODUCTION

According to the World Health Organization (WHO), aging is a natural stage of development or a normal part of human existence. The clinical and statistical studies have shown that older people have a wider participation in the illnesses of chronic character in relation to other population groups. According to some studies each person over 65 years has, on average, 3-4 chronic diseases (1).

Aging reduces the amount of water in the tendons and ligaments. Therefore, they become less elastic, rigid and weak, which can reduce the mobility of the joints. Changes in bone and joint system lead to painful degenerative diseases, osteoarthritis and osteoporosis. With aging muscles lose their contraction ability, become less elastic and lose strength (2).

Osteoarthritis of the joints (osteoarthritis or arthritis) is the largest group of rheumatic diseases. Within rheumatic diseases 50% are degenerative rheumatic diseases, 10% inflammatory and 40% extra-articular. According to some studies among the population over 35 years the prevalence is 60%, while radiologically documented osteoarthritis is present in about 80% of people over 55 years, although symptoms are present only at 20-40% of cases. Osteoarthritis occurs by degeneration of the cartilage that lines the surface of the joint. It becomes thinner, so that partially the bone stripped away and the process transfers to the bone beneath the cartilage. In response to this develops bone spurs, as small pins, which protrude into the articular cavity and create pain. Thinning of the cartilage narrows joint space. As the process progresses joint space may completely disappear. The joint becomes deformed and this deformity patient registers as swelling. Among

symptoms prevails pain, difficulty in movement, morning stiffness for less than 30 minutes, instability and disorder in function of the affected joint. Objective signs of the disease are enlargement and deformity of the affected joint, crepitus during movement in the joint and limited mobility. Stiffness can be linked to the particular movement or change of position of the body (3).

Diagnosis is based on clinical examination, which includes: palpation, the range of motion measurement, the circumference of the joints, manual muscle test of the surrounding muscle groups, measurement of the local temperature and pain provocation tests (4).

According to localization the most commonly is affected one joint. Sometimes it can be affected even more joints, and by the frequency the most commonly are encountered the following topographic representation: Osteoarthritis of the distal interphalangeal joints (Heberden arthritis), knee osteoarthritis (Gonarthrosis), osteoarthritis of the hip joint (Coxarthrosis) and osteoarthritis of carpal metacarpal joint of the thumb (Rhizartrrosis). Less frequently are affected temporomandibular joints, ankle, shoulder, elbow joint and others (4).

In addition to the musculoskeletal system, degenerative changes can affect the nervous system. Degenerative diseases of the nervous system are: Alzheimer's disease, amyotrophic lateral sclerosis, Friedrich's ataxia, Huntington's disease, the LBD, Parkinson's disease and spinal muscle atrophy (5).

The treatment of degenerative joint disease is different according to the severity of the disease and the patient's expectations as well as level of activity. In addition to the analgesic and anti-inflammatory drugs, conventional and non-conventional treatment methods and techniques can be used in the treatment of osteoarthritis. Physical therapy and exercise are very important in establishing muscle strength, joint stability and mobility, but they should be under strict supervision for optimum efficiency (6).

Physical therapy is the treatment of choice for degenerative rheumatism. It can reduce pain, to relieve less severe inflammation, strengthen weakened muscles and increase joint mobility. From physical modalities are used: thermotherapy, electrotherapy, ultrasound, magnetic therapy and laser therapy. These represent the introductory procedure for the most important procedure, which is kinesitherapy and hydro kinesitherapy. All methods of physical therapy are suitable as have analgesic effect and have no adverse effects (7).

2. GOAL

The goal of this study is to determine the modalities of physical therapy for elderly people with degenerative diseases.

3. MATERIAL AND METHODS

The study is retrospective-prospective and descriptive. The survey involved 25 patients with degenerative diseases of the musculoskeletal and nervous systems in Gerontology Center in Sarajevo, from May 1, 2014- April 30, 2015.

Inclusion criteria:

1. Elderly persons (over 65 years);
2. Users of physical therapy services and
3. Verified diagnosis of degenerative diseases.

Exclusion criteria:

1. Persons under the age of 65 years;
2. Person who did not use the services of physical therapy and
3. Person without a diagnosis of degenerative diseases.

As research instruments were used: Questionnaire for users of physical therapy at the Gerontology Center in Sarajevo self-developed visual-analog scale to assess pain and patient records. The questionnaire and a visual analogue scale for pain assessment were filled out by 22 patients, while 3 patients were absent due to poor health state.

Questionnaire for users of physical therapy at Gerontology Center in Sarajevo consists of 18 questions related to the general health of the patient, the use of physical therapy services, quality of physiotherapist's service in the center, use of medications etc. The visual analogue scale for pain assessment the patient recorded level of pain before and after the application of physical therapy. Statistical analysis is performed using statistical software for medical research MedCalc v12.7 by Fisher exact test and Yates chi-square test with the significance level set at 95%.

4. RESULTS

Elderly age groups	Gender		Total (%)
	Male	Female	
Early old age (65-74 yrs.)	3	5	8 (32%)
Medium old age (75-84 yrs.)	6	9	15 (60%)
Late old age (From 85 yrs.)	1	1	2 (8%)
Total (%)	10(40%)	15(60%)	25 (100%)

Table 1. The relation of age and gender of patients with degenerative diseases

From the total number of patients with degenerative diseases (25), 10 (40%) were male and 15 (60%) were female. Most patients with a degenerative disease are in the middle age group, 15 (60%), 6 males and 9 females, then the early old age 8 (32%), 3 males and 5 females, and the least patients is in late old age 2 (8%), 1 male and 1 female. Statistical analysis indicate that there is no significant difference in age distribution according to gender ($\chi^2=0.304$; $p=0.858$).

Diagnosis	Gender		Total (%)
	Male	Female	
Cervical spondylosis	2	1	3 (8%)
Cervical radiculopathy	2	0	2 (6%)
Cervicobrachial syndrome	1	1	2 (6%)
Lumbar spondylosis	2	2	4 (10.5%)
Lumbar radiculopathy	3	2	5 (13%)
Lumbar syndrome	1	0	1 (3%)
Hip osteoarthritis	1	3	4 (10.5%)
Knee osteoarthritis	3	8	11 (29%)
Parkinson's disease	2	1	3(8%)
Osteoporosis	0	2	2 (6%)

Table 2. Degenerative diseases at the Gerontology Center in Sarajevo

Twenty-five patients had ten different degenerative diseases, which in eight cases occur as comorbidities. The most common degenerative disease is knee osteoarthritis which had 11 patients (29%), 3 males and 8 females. Then follows

lumbar radiculopathy, which had 5 patients (13%), 3 males and 2 females. In third place by the representation is the lumbar spondylosis and hip osteoarthritis, in 4 patients (10.5%). Statistical analysis indicate that there is no significant difference in distribution of degenerative diseases according to gender ($\chi^2=2.580$; $p=0.978$).

Physical procedure	Gender		Total (%)
	Male	Female	
Kinesitherapy	10	15	25 (100%)
Manual massage	7	8	15 (60%)
TENS	8	7	15 (60%)
Ultrasound	5	4	9 (36%)
Interferential currents	3	4	7 (28%)
Diadynamic currents	2	1	3 (12%)
Cryomassage	0	2	2 (8%)
Thermotherapy	1	0	1 (4%)
Galvanization	0	1	1 (4%)
Magnet	0	1	1 (4%)

Table 3. Relation between physical procedures and gender

From modalities of physical therapy in the treatment of degenerative diseases at the Gerontology Center in Sarajevo, kinesitherapy was used in all cases, followed by manual massage and TENS in 15 patients (60%). In nine cases (36%), 5 male and 4 female patients the ultrasound therapy is used. Interferential currents were used in the treatment of seven patients (3 male and 4 female), and diadynamic currents for three patients (2 male and 1 female). Cryomassage underwent two patients. Thermotherapy (hot pack) was applied to one male patient, while galvanization and magnet for one female patient respectively. Statistical analysis indicate that there is no significant difference in distribution of applied physical therapy procedures according to gender ($\chi^2=6.149$; $p=0.724$).

Out of twenty-two patients, who filled out a questionnaire,

Question		Answers		Total (%)
Does your pain prevent you to perform some daily activities?		YES	NO	
Gender	Male	8	1	22 (100%)
	Female	9	4	
Total (%)		17 (77%)	5 (23%)	

Table 6. The pain and daily activities

Question		Answers					Total (%)
How would you rate your health in general?		Excellent	Very good	Good	Poor	Very poor	
Gender	Male	0	1	3	2	2	22 (100%)
	Female	0	0	4	9	1	
Total (%)		0	1 (4%)	7 (32%)	11 (50%)	3 (14%)	

Table 4. General assessment of health

Aid	Gender		Total (%)
	Male	Female	
Single thrust cane	2	3	5 (50%)
Three thrust cane	0	1	1 (10%)
Walker	1	2	3 (30%)
Wheelchair	0	1	1 (10%)
Total	3	7	10 (100%)

Table 5. Representation of aid use by gender

Question		Answers		Total (%)
Do you use a medication to reduce the pain?		YES	NO	
Gender	Male	6	3	22 (100%)
	Female	9	4	
Total (%)		15 (68%)	7 (32%)	

Table 7. Representation of drug therapy

eleven (50%, 2 male and 9 female) rated their health as poor. Seven patients (32%, 3 male and 4 female) assessed their health as good. Three patients (14%, 2 male and 1 female) rated their health as very poor, while one patient (4%, 1 male) rated its health as very good. Statistical analysis indicate that there is no significant difference in assessment of health according to gender ($\chi^2=4.639$; $p=0.2002$).

Of the twenty-two patients, ten use a certain orthopedic aid. Five patients (50%, 2 male and 3 female) used single thrust cane, three patients (30%, 1 male and 2 female) use a walker, one patient (10%) use Three thrust cane and one patient (10%) use a wheelchair. Statistical analysis indicate that there is no significant difference in type of orthopedic aid used according to gender ($\chi^2=1.111$; $p=0.888$).

When asked about the impact of pain on daily activities, seventeen patients (77%, 8 male and 9 female) responded positively, while five patients (23%, 1 male and 4 female) gave a negative answer. Statistical analysis indicate that there is no significant difference in limitation for performing daily life activities according to gender ($\chi^2=1.17$; $p=0.279$).

Seven patients (32%) do not use medications for reduction of pain. The other fifteen patients (68%) use medication to reduce pain (Analgin, Melox forte, Ibuprofen, Diphenyl, Caffetin, Litozin, Naklofen, Dexomen, Aspirin). Statistical analysis indicate that there is no significant difference in use of pain medications according to gender ($\chi^2=0.016$; $p=0.899$).

5. DISCUSSION

Cantonal Public Institute “Gerontology Center” Sarajevo is a public institution that provides institutional and non-institutional forms of social and health care, that studies and deals with the problems of aging and old age. The Gerontology Center (GC) provide services for about 340 users in Homes for elderly and about 30 users in home care. Risk factors that most often lead to institutionalization include age, functional and marital status, living conditions, income, gender and health status. According to the latest GC data, the most common reasons for the institutionalization are the diseases (43.38%), loneliness (27.13%) and lack of social support (8.55%), while certain number of users is institutionalized because of the unresolved housing issues, poor financial situation and functional incapacitation (8.26%). The present study identified five variables that probably affect the institutionalization: age, self-rated health, number of limited daily activities, social activities and living conditions (8).

Osteoarthritis is chronic, non-progressive, primary degenerative disease of the joint cartilage. It primarily affects cartilage as opposed to rheumatoid arthritis. These are the most common rheumatic diseases in medical practice (80% of all joint diseases). In Poland are encountered in 13.5% of the population, in Italy at 5.4%, in Russia at 4.16 to 10% of

the population and in Croatia in 17.3% of adults (9).

Bojicic S, in the study Evaluation of the success of combined treatment and classical physical treatment of osteoarthritis of the knee, states that from the total number of respondents 290, 75% are females. This study also states that the majority of patients with knee OA, are the elderly at the average age of 65.5 years. In the standard approach to treatment of knee OA, the most commonly used is ultrasound (in 91% of patients), TENS (77%), interference currents (63%) and cryotherapy with 54% of respondents (10).

The most common illness of older age groups in Turkey is degenerative joint disease and pain associated with this disease. Analgesics and physical therapy are a preferred treatment for geriatric chronic pain. Research by Cevik C. and his associates included 34 patients, 24 women and 8 males. The mean age was 69.0417 ± 8.95 years in women and $73.12 \pm 8.95.24$ years in males. The effect of acupuncture on the treatment of the back and knee was investigated and the results showed that there was a significant reduction in pain during and after acupuncture treatment. These are important results because they give justification for acupuncture treatment widely in chronic pain in the lower back and knee pain in the geriatric group of patients to reduce the side effects of polypharmacy in older people (11).

Muftić M., et al., have investigated the effects of therapeutic ultrasound on pain that results from degenerative diseases of the musculoskeletal system. The results of this study in a sample of 68 patients showed that the use of continuous ultrasound in patients with chronic pain caused by degenerative changes in the musculoskeletal system significantly reduced the pain. Different intensity and duration of ultrasound administration did not show a significant effect on the degree of pain reduction. The body mass index showed a significant negative correlation with the degree of pain reduction, but the age, gender and pain position did not show significant association (12).

Tepic S, et al, in their prospective study that included 70 patients with lumbar DH and conducted physical treatment, came to the conclusion there were no significant difference in VAS scale score before and after treatment (13).

Slow walking with reduced body dynamics is a characteristic feature of locomotion in elderly people, and disturbed mobility and dropouts associated with walking disorders significantly contribute to reducing the quality of life of elderly people. The common causes of impaired walking in the elderly include neurological deficits, neurodegeneration (e.g., cerebellar ataxia and Parkinson syndromes), cognitive disorders (e.g. degenerative dementia), joint degeneration (e.g. coxarthrosis) and muscle mass (sarcopenia) contributes to walking disorder. Jahn K. and the others in the study conducted in 2015 concluded that identifying the deficit is a prerequisite for specific therapy. As physical activity protects against cognitive disorders, it reduces the risk of falling and improves the overall quality of life, and is a key structured estimate of the causes of motion impairment (14).

Although hydrotherapy is often recommended for older adults with osteoarthritis, less is known about aqua fitness (AF), a widely available aqua-based exercise. In a study by Fiskena and Associates, thirty-five elderly adults with osteoarthritis were assigned to the AF group or an active control

group who had been taking exercise sessions in warm water for 12 weeks. The primary outcome measurement was tested by time measurement (TUG); (FES-I), examination of strength on the handle, examination at 400 meters of walking, short form of scaling measure for effect on arthritis (AIMS2-SF). Based on the results of the research (FES-I scores improved significantly in the AF group compared to the control group $P = 0.04$; the analysis within the group showed that both groups significantly improved their walking time of 400 meters $P = 0.0$), and it was concluded that Aqua Fitness can offer a number of positive functional and psychosocial benefits for older adults with osteoarthritis, such as reduced fear of falling and increased ability to perform daily tasks (15).

According to a study by Talaga et al., In a study involving 50 subjects, the aim was to investigate health problems in patients with degenerative spinal diseases as a major cause for worsening physical fitness and to determine the need for health education. Researchers have come to the conclusion that major health problems were cervical and lumbar pain in the spine that was experienced during prolonged physical activity during everyday life, quality of life decreased with increasing difficulties in performing daily activities, it is important to strengthen the patient's belief that physical activity, including and physiotherapy, has a positive influence on physical ability and ability to perform daily activities, and the essential goal of the therapeutic team is to support and motivate patients to struggle with difficult situations and function in society (16).

Planning policy of health and social care for the elderly with degenerative diseases of the brain is an imperative of any democratic and humane society. In the past, the family has traditionally had the most important role in the care of elderly, while today due to the increase of life expectancy that role are taking over social institutions. Programs and care strategies for seriously ill elderly people, especially with dementia, should be particularly examined and find applicable program and strategy for application in our conditions. It would be useful to study the share of these people in the population (17).

6. CONCLUSION

The Research Physical therapy in elderly with degenerative diseases is a pilot project, which highlights the need for:

- Conducting research for a longer time period, with a larger sample;
- Quality of keeping health records;
- Implementation of a continuous evaluation of functional status and;
- Stricter control for optimal effectiveness of physical therapy in order to improve the quality of life of elderly patients.

• Conflict of interest: None

REFERENCES

1. Švraka E, Avdić D, Hasanbegović-Anić E. Okupaciona terapija. Univerzitet u Sarajevu. Fakultet zdravstvenih studija. Sarajevo, 2012.
2. Šarić E. i saradnici. Treća životna dob - veliko putovanje. Bosphorska riječ, Tuzla. Tuzla, 2014.

3. Kapidžić-Bašić N. Najčešće reumatske bolesti. COPYGRAF. Tuzla, 2007.
4. Jevtić M. R. Klinička kineziterapija. Medicinski fakultet, Kragujevac. Kragujevac, 2001.
5. Degenerative nerve diseases. Dostupno na www.nlm.nih.gov; Pristupljeno: 12.5.2015.
6. Jandrić S. Etiologija, patofiziologija i konzervativna terapija degenerativnih reumatskih bolesti. Medicinski pregled. 2002; 55(1-2): 35-9.
7. Tršek D. Zglobovi propadaju postupno i trajno. Vaše zdravlje - vodič za zdraviji život. 2012; 81.
8. Bahto A, Tičić E. Psihosocijalna prilagodba korisnika u Gerontološkom centru Sarajevo. III Kongres psihologa Bosne i Hercegovine s međunarodnim učešćem. Zbornik radova, 2013; 3: 1931.
9. Ristić V, Zgradić I, Jokić A, Zogović N, Sovrlić B., Stanimirović T. i saradnici. Opšti problemi degenerativnog reumatizma. U: Kolektivni udžbenik. Reumatologija za praksu. Naša knjiga, Beograd, 2013.
10. Bojičić S. Evaluacija uspješnosti kombinovanog tretmana i klasičnog fizikalnog tretmana artroze koljena. Magistarski rad. Fakultet zdravstvenih studija Univerziteta u Sarajevu, Sarajevo, 2011.
11. Çevik C, Anil A, İşeri SÖ. Effective chronic low back pain and knee pain treatment with acupuncture in geriatric patients. J Back Musculoskelet Rehabil. 2015; 28(3): 517-20. doi:10.3233/BMR-140550.
12. Muftić M, Miladinović K. Therapeutic Ultrasound and Pain in Degenerative Diseases of Musculoskeletal System. Acta Inform Med. 2013; 21(3): 170-2. doi: 10.5455/aim.2013.21.170-172.
13. Tepić S, Milić-Krčum B, Kuruzović Lj, Đurašinović B, Kopanja M. Fizikalna terapija kod pacijenata sa lumbalnom diskus hernijom neoperativno i operativno liječenih. Zbornik radova. XI kongres fizijatara Srbije. Udruženje fizijatara Srbije; Zlatibor, 2011; 37(1): 269.
14. Jahn K, Heinze C, Selge C, Heßelbarth K, Schniepp R. Gait disorders in geriatric patients. Classification and therapy. Der Nervenarzt. 2015; 86(4): 431-9. doi: 10.1007/s00115-014-4182-8.
15. Fiske AL, Waters DL, Hing WA, Steele M, Keogh JW. Comparative effects of 2 aqua exercise programs on physical function, balance, and perceived quality of life in older adults with osteoarthritis. J Geriatr Phys Ther. 2015; 38(1): 17-27. doi:10.1519/JPT.000000000000019.
16. Talaga S, Magiera Z, Kowalczyk B, Lubińska-Żądło B. Problems of patients with degenerative disease of the spine and their quality of life. Ortop Traumatol Rehabil. 2014; 16(6):617-27. doi: 10.5604/15093492.1135122.
17. Žiga J, Kurbegović Čampara N. Sociodemografske karakteristike depresije i demencije u trećoj životnoj dobi- Studija slučaja: Kanton Sarajevo. Sarajevo Social Science Review. (Sarajevski žurnal za društvena pitanja), 2013; 2: 7-32.