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EFFECTIVENESS OF MASSAGE THERAPY IN REDUCING BACK PAIN IN OLDER ADULTS

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ABSTRACT

Background: Lower back pain is one of the most common complaints in the elderly. Pain symptoms can be chronic and aggravated by comorbidities. Back pain leads to reduced function, difficulty performing activities of daily living, and prevents physical activity. Massage is one of the more commonly used forms of physiotherapy for these complaints.

Aim of the study: The purpose of this study was to assess the effectiveness of therapeutic massage for spinal pain in older adults.

Material and methods: Twenty-three participants, including 18 females and 5 males aged 61–85 years old, participated in the study. All patients had degenerative lesions of the spine that were diagnosed by their primary care physician. Patients received classical therapeutic back massages for a period of 3 weeks at a frequency of 2 times a week. Each treatment session was 40-minute-long. Analysis of pain was performed before and immediately after therapy to assess changes in pain. The McGill (short form) and the WHOQL-BREF questionnaires were used to assess the level and quality of life of the study participants. Pain intensity was assessed using the visual analog scale (VAS).

Results: There was a reduction in pain intensity (VAS) and pain perception after massage therapy, with changes in the sensory and emotional components of the pain score. The changes were statistically significant. Quality of life measured by the WHOQOL-BREF questionnaire was at a good level. Elderly participants rated social relationships the highest and physical components the lowest.

Conclusions: Massage therapy resulted in a reduction of spinal pain in older adults. Massage is an effective form of therapy for reducing back pain in older adults.

KEYWORDS: classical massage, back pain, older adults

Background

Back pain affects a significant portion of the population. According to numerous authors, 80% of the population experience at least one incident of back pain in their lifetime [1–2]. The prevalence of chronic and short-term back pain is increasing in Europe, America, and Scandinavia [3–4]. In addition, acute spinal pain is occurring in an increasingly younger population and diagnostic testing often identifies advanced lesions in the form of herniations and protrusions that are indications for neurosurgical treatment [5–6]. This trend has been inextricably linked to the lifestyles led by the younger generation. It is dominated by automation, digitization, convenience, minimum effort, and maximum satisfaction. In ad-

dition, they demonstrate a more sedentary lifestyle, an inability to cope with stress, and increased peer pressure. Nevertheless, the pathomechanism of spinal pain is different among the elderly. Overloading, degeneration, excessive stress on the bony elements, and senile changes in the soft tissues are compounded by comorbidities that aggravate symptoms and lead to the degeneration of spinal structures. In the elderly, pain is typically chronic with classic symptoms, but short-lived, paroxysmal pain with an acute course and nonspecific symptoms can be experienced as well [3,7].

Chronic spinal pain does not just mean functional dysfunction but also affects all other aspects of life leading to resignation from or significant limitation of professional, social, and family activities [9–10].

There are many studies evaluating the use of specific therapies to treat back pain. Treatment options are separated into distinct groups such as surgical treatment (decompression of compressed nerve roots, securing herniated intervertebral discs) and conservative treatment, which includes pharmacotherapy and physiotherapy. Physiotherapy consists of kinesiotherapy, physical therapy, and massage therapy. Among the physical treatments, the most common include transcutaneous nerve stimulation (TENS) and low-frequency laser therapy [7,11]. Craniosacral therapy, manual therapy, joint mobilization, and manipulations are also used [1,11]. Pilates exercises, stretching of the ischiocrural muscles, strengthening of the paraspinal muscles, yoga, tai-chi, and acupuncture are also applicable [7,12–14]. Many types of massage have been evaluated including Swedish, classical, traditional Thai, Chinese, Ayurvedic, aromatherapy (with ginger oil), deep tissue, therapeutic, and relaxation massage [1,11–21]. Studies on the effectiveness of therapy for low back pain measure the variability in clinical symptoms, such as quantitative and qualitative aspects of pain, current mood, ability to perform activities of daily living, and quality of performance of simple and complex functions. Assessing the effects of therapy involves using the Visual Analogue Scale (VAS) and questionnaires such as the McGill Pain Questionnaire (MPQ – short form), Oswestry Disability Index (ODI), Low Back Pain Scale, Neck Disability Index (NDI), WHOQOL-BREF and the Quality of Life (QoL) questionnaire [15,17–19,21].

Therapies aimed to reduce pain and return patients to their professional, social, and family activities. Because of this, therapeutic management should be used early, comprehensive, and combined with patient education [4,7,22–23].

Therapy is complemented by the consolidation of the therapeutic effects achieved through various forms of self-therapy in the form of self-massage and gymnastics performed on one's own. Additionally, teaching proper movement techniques in performing basic activities of daily living helps to prevent further painful incidents. This is of particular importance when it comes to the elderly, whose appropriate motivation and involvement of other family members are needed to achieve the full, intended, and expected therapeutic effects.

Massage can play an important role in this process by normalizing the tension of musculoskeletal soft tissues and improving their blood supply to produce significant reductions in pain.

Aim of the study

The purpose of this study was to evaluate the effectiveness of massage therapy in reducing lower back pain in older adults. Additionally, the QoL of the participants was assessed.

Material and methods

Study design, setting, and duration

Subjects were treated with a classic back massage for a period of 3 weeks, at a frequency of 2 times per week, with each session lasting 40 minutes. The treatment consisted of massaging the two sides of the back in a side lying position (Fig. 1). The use of the prone position was contraindicated in most participants due to advanced age, limited thoracic mobility, and inability to breathe freely during the procedure.

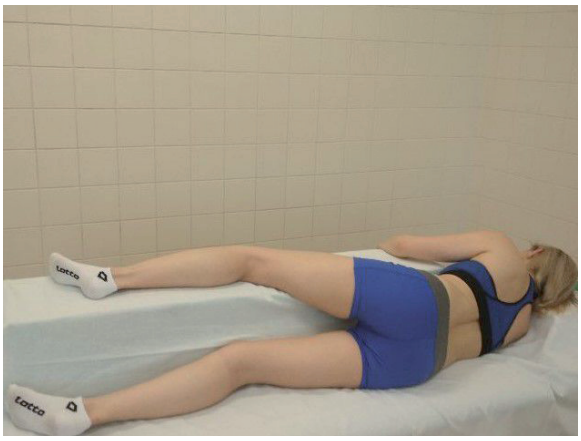

Figure 1. Massage position

Participants

Twenty-three subjects including 18 women and 5 men aged 61–85 years (mean: 68.9; SD=3.75) participated in the study. They were all residents of a large Polish city, Wroclaw. Study participants lived in sin-

gle-family homes with other family members. In 25% of respondents, systematic trips to health resorts (Polish sanatoria) with a frequency of once every two years were reported. Additionally, 40% reported that they receive various forms of physiotherapy from the National Health Service at least once a year. All patients had degenerative changes of the spine at the time of referral from their primary care physician. The cervical region was involved in 5 patients, the thoracic region in 2 patients, the lumbar region in 10 patients, and 6 patients had changes in both the cervical and lumbar segments of the spine. Most participants had one or more types of imaging studies performed in their medical records: magnetic resonance (MR), X-ray, or computed tomography (CT) scan of the spine. The structural changes most commonly seen in the studied patients were Schmorl nodes, osteophytes on the posterior edges of the vertebral bodies, degenerative and productive or degenerative and deforming changes to the edges of the vertebral bodies, exaggerated lumbar lordosis, intervertebral disc diseases such as bulging and herniations pressing on the meningeal sac and peripheral nerve roots, a history of inflammation of the nerve roots, overloading of a specific section of the spine, narrowing of the intervertebral spaces, and degenerative changes in the intervertebral discs. Among comorbidities, patients reported a history of painful shoulder syndrome, degenerative changes in the hip and knee joints, and golfer's and tennis elbow.

Ethics approval and consent to participate

The research was approved by the Ethics Committee of the University of Physical Education in Wroclaw, Number 2/2018. Before participating in the research, the patient's signed a consent form to participate in the project.

Data sources/ Measurement

After giving written consent to participate in the study, patients completed a questionnaire during their first visit. The questionnaire included basic information about age, sex, activities of daily living, diagnosed comorbidities, and type of hobbies. The MPQ (short version) was used which analyzed the sensory characteristics of pain (sensory characteristics describing pain, e.g. strength), affective characteristics of pain (emotional feeling of pain, e.g. anxiety), and current pain intensity expressed using the VAS. Pain analyses were performed before and immediately after therapy to assess changes in pain perception. The WHOQL-BREF questionnaire was also used to assess the level and QoL of participants.

Massage methodology

The massage treatment consisted of three parts: initial, main, and final. First, superficial and deep stroking of the back was performed by spreading a lubricant and familiarizing the patient with the touch. This was followed by the use of circular displacement and skin rolling to increase skin pushing and mobility. Spiral rubbing was then performed on the fascia of the back to improve the nourishment of the massaged tissue. During the main part, transverse kneading of the back's superficial muscles (latissimus dorsi and trapezius) was performed followed by spiral rubbing of the muscles located within the scapula including the rhomboids, supraspinatus, infraspinatus, and teres muscles. Next, the erector muscles of the spine and the quadratus lumborum were worked out by rubbing with the elbow or part of the hand using the transverse kneading technique. In the final part of treatment, superficial stroking was performed again (decreasing the strength of the stimulus) to calm the body. The entire treatment sequence was then repeated on the other side of the body.

Statistical methods

In order to check the normality of distribution, the Shapiro-Wilk test was used. The Wilcoxon test was applied to assess the results of the MPQ and the VAS. The results of the WHOQOL-BREF questionnaire were calculated according to the developer's guidelines [26–27].

Results

Descriptive data

The WHOQOL-BREF questionnaire assessed four domains of QoL: physical functioning, mental functioning, social functioning, and environmental functioning. In addition, two items were analyzed separately and included the individual overall perception of QoL and individual overall perception of self-reported health. Each answer was scored on a 1 to 5-point scale. A maximum of 20 points could be earned in each area. The higher the score, the higher the QoL. The obtained results were calculated according to reported guidelines [26–28]. The respondents rated their QoL as good with the best score in the social domain, which shows that they were satisfied with the social relationships in their lives. The physical domain was rated the weakest by study participants indicating that somatic symptoms are strongly perceived and significantly reduce QoL (Table 1).

Table 1. WHOQOL-BREF questionnaire scores reported by domain

Quality of life domain survey (n=23)	Minimum	Maximum	Mean	Standard deviation
Overall quality of life – WHO1	3	5	3.695	0.558
Life satisfaction – WHO2	2	4	3.130	0.694
Physical domain – DOM1	9	15	12.695	1.663
Psychological domain – DOM2	11	18	13.782	1.731
Social relations – DOM3	11	19	14.260	2.526
Environment – DOM4	10	17	13.565	2.232

The MPQ analyzed the sensory component of pain (four-item scale), the affective aspect of pain (four-item scale), current pain intensity (six-item verbal numerical rating), and pain intensity using the VAS.

The questionnaires are a subjective assessment of the patient's feelings, but the MPQ is designed to provide a quantitative and qualitative description of pain. The choice of words to characterize pain were varied and broad, making it easier to specify the nature of pain. However, when working with the elderly, making sure the words are understood and the grading of intensity is appropriate to the patient's current condition must be considered. It is also advisable to assist them in completing the questionnaire.

Every component of the pain score improved after treatment. Changes in the sensory and affective (emotional) components were manifested by the fact that after therapy, patients chose fewer adjectives to describe the pain they were experiencing and marked a lower (weaker) intensity of pain (Fig. 2 and 3).

Pain severity (pain intensity) expressed by the words "very severe" or "severe" changed to "light" or "mild" after therapy. After therapy, none of the participants experienced pain described by the words "awful — unbearable" expressed by a maximum score of 5 (Fig. 4). Pain intensity measured on the VAS scale reached a maximum value of 8 before therapy and 3 after therapy. The lowest value was 3 before therapy and 0 after therapy meaning no pain. The noted changes were statistically significant (Fig. 5).

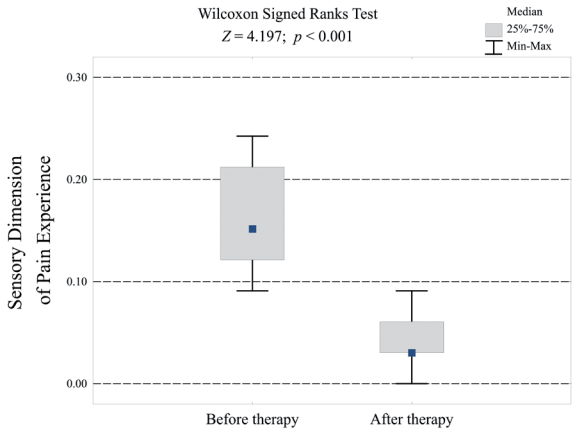

Figure 2. Sensory aspect of pain before and after therapy

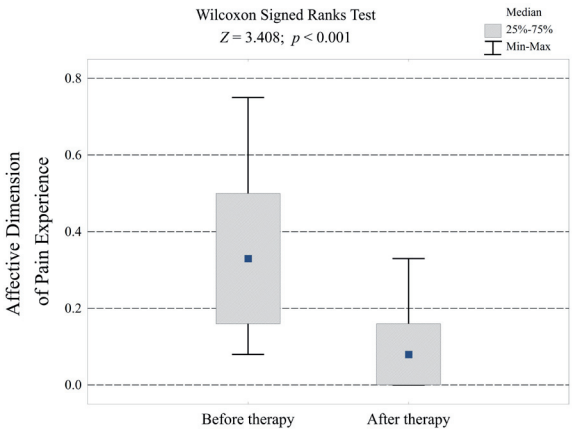

Figure 3. The affective aspect of pain before and after therapy

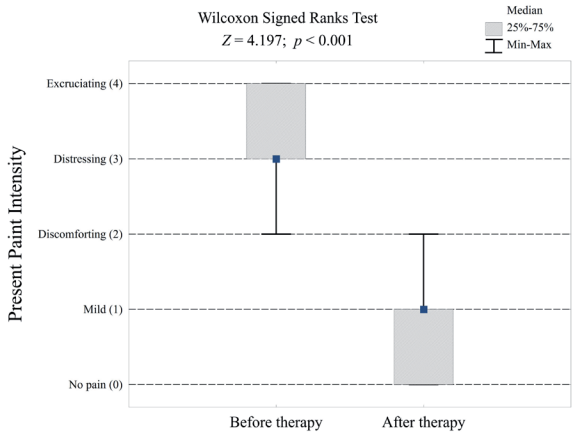

Figure 4. Current pain intensity (CPI) before and after therapy

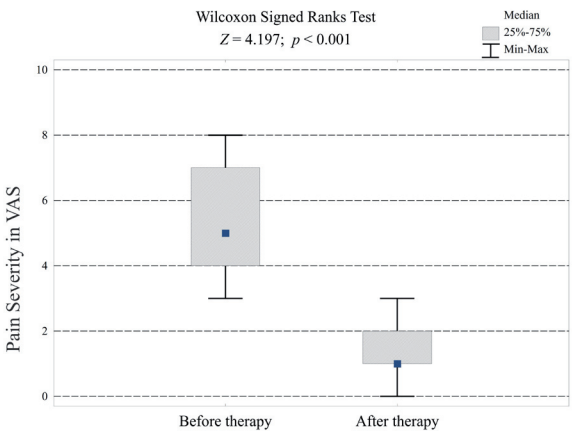

Figure 5. Pain intensity (VAS) before and after therapy

The patient's sensory and emotional experience of pain, as well as current pain intensity (CPI) and pain severity (VAS), changed positively immediately after therapy and were statistically significant (Table 2).

Table 2. McGill questionnaire scores in the study group before and after therapy

Parameter	Before therapy			After therapy			Test result p
	M±SD	Me [Q1; Q3]	Min–Max	M±SD	Me [Q1; Q3]	Min–Max	
VAS	5.4±1.5	5 [4; 7]	3–8	1.3±1.0	1 [1; 2]	0–3	**<0.001**
AIB	3.30±0.63	3 [3; 4]	2–4	0.87±0.69	1 [0; 1]	0–2	**<0.001**
Sensory	0.16±0.05	0.15 [0.12; 0.21]	0.09–0.24	0.04±0.03	0.03 [0.03; 0.06]	0.00–0.09	**<0.001**
Affective	0.34±0.20	0.33 [0.16; 0.50]	0.08–0.75	0.10±0.11	0.08 [0.00; 0.16]	0.00–0.33	**<0.001**

M – arithmetic mean; SD – standard deviation; Me – median (50%); Q1 – lower quartile (25%); Q3 – upper quartile (75%), Min – lowest value; Max – highest value.

Discussion

Massage is a treatment used for various ailments that occur in the elderly. It is very common for seniors to have a relaxing back massage, which, when performed slowly, calmly, and gently is intended to relax and facilitate falling asleep [4, 29]. Therapeutic abdominal massage is also to support the internal organs [30–31]. Common complaints in the elderly requiring physiotherapeutic intervention including therapeutic massage are degenerative changes in the knee and hip joints, spinal disorders, or chronic pain resulting from rheumatic diseases [21, 32–37].

Seniors should remain physically active for as long as possible, as the progressive and inevitable changes that occur with age in the body can lead to many dysfunctions.

We cannot stop time, we cannot stop the physiological changes that occur in the body, but we can and should prevent and keep the body in good physical condition and the mind in good mental condition [37].

Chronic diseases and comorbidities occurring in old age with predominant somatic symptoms affect other elements of life such as functioning in daily, social, family, and community life [24–25].

Interpretation

The results of the study regarding perceived and declared QoL are similar to those declared by young people diagnosed with chronic diseases. Young obese or overweight people face not only physical problems, but also resign from their social life, do not participate in social activities, and avoid integration at work over the course of the disease [28]. In one study, obese individuals obtained the lowest scores in the psychological domain while performing best in the social domain [28]. In our study, the seniors also scored highest in the social domain and lowest in the physical domain which confirms that somatic symptoms limit one's functioning and motor activities. The QoL of the studied seniors is perceived to be similar to that of women after mastectomy procedures. A patient's QoL is significantly affected by the surgical treatment of neoplastic lesions and removal of the breast. They often demonstrate resignation from life, isolation from family and friends, and a lack of desire to participate in social life. According to the study, the physical domain of female respondents was rated the worst which is similar to that of the elderly people in our study [38]. The social domain had the best results similar to the older adults surveyed. In the case of older people, advanced age and the associated limitations and dysfunctions within the musculoskeletal system, lack of independence, and need for assistance from third parties constitute factors leading to the abandonment of numerous forms of activity.

Various types of massage have been repeatedly used in spinal pain [15,18,37]. However, in many cases, the methodology of the procedure was not specified or described in detail, and the methods of performing each technique varied among numerous authors. The treatment duration, number of repetitions of each movement, types of techniques used, and duration of each session were all different. The measurement methods were also different making it hard or even impossible to compare the results of our study with other authors [29,37].

The positive effects of massage on pain reduction have been repeatedly reported in the literature, but the results have usually been short-lived [1,4,19]. However, even a short-term reduction in pain provides a good opportunity to participate in physical activity, especially for the elderly, whose activities are significantly reduced compared to younger people. The correct sequence of therapeutic measures is also

very important. Pain reduction is the first priority followed by motivation to undertake physical activity. Massage should play a special role in this process as it creates conditions for further improvements by alleviating pain [19].

Generalizability

It is also important to note that the elderly are very willing to undergo massage therapy. Nevertheless, they should be made aware that self-therapy in the form of self-massage or therapeutic gymnastics performed on their own are equally important and necessary. Self-therapy applied systematically allows for the consolidation of the therapeutic effects achieved and prevents future recurrences of pain, thus contributing to improved physical fitness and improved the QoL of the elderly [39–40].

Study limitations

The results of this study evaluated the state immediately after the end of therapy. In order to demonstrate the consolidation of therapeutic effects, the measurements should be repeated one, three, and six months after the end of treatment. The research should be continued on a larger group of patients.

Conclusions

Massage resulted in a reduction of spinal and lumbar pain in older adults. Massage is an effective form of therapy for reducing back pain in older adults. The pain complaints in the study group reduced their QoL.

Declarations/Acknowledgements

Registration: The Senate Committee for Ethics in Scientific Research at the University School of Physical Education approved this research project, entitled "Assessment of the effectiveness of massage in rehabilitation in back pain syndromes", on 09.02.2018.

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