

ОРГАНИЗАЦИОННО-МЕТОДИЧЕСКИЕ ОСНОВЫ ВОССТАНОВИТЕЛЬНОЙ МЕДИЦИНЫ И МЕДИЦИНСКОЙ РЕАБИЛИТАЦИИ

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SPA-THERAPY CAN IMPROVE QUALITY OF LIFE IN CHRONIC MUSCULOSKELETAL DISORDER SUBJECTS: A NARRATIVE REVIEW

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ABSTRACT

Chronic Musculoskeletal Disorders (MSDs) are age-related conditions, linked to functional impairment and decreased quality of life (QoL). As a result of the increased life expectancy in Europe, great attention has been focused on investigating the impact of these diseases on QoL. Thermal environment is a suitable place for providing interventions (mud therapy, bath, exercise, etc.) for chronic MSD patients. Our narrative review aims to assess if Spa therapy may improve QoL in patients with chronic MSDs. We searched randomized clinical trials and clinical trials screening PubMed and Google Scholar databases from 2016 up to March 2020. We included 14 trials testing Spa therapy interventions concerning osteoarthritis, rheumatoid arthritis, chronic shoulder pain and fibromyalgia. In conclusion, even though limitations must be considered, evidence shows that Spa therapy, especially in combination with rehabilitation approach, can significantly improve QoL of patients with chronic MSDs.

Keywords: spa therapy; balneotherapy; mud therapy; quality of life; rehabilitation; exercise; aquatic exercises; health; musculoskeletal disorders; osteoarthritis; fibromyalgia; low back pain.

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СПА-ТЕРАПИЯ СПОСОБНА УЛУЧШИТЬ КАЧЕСТВО ЖИЗНИ ПАЦИЕНТОВ С ХРОНИЧЕСКИМИ ЗАБОЛЕВАНИЯМИ ОПОРНО- ДВИГАТЕЛЬНОГО АППАРАТА: НАРРАТИВНЫЙ ОБЗОР

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РЕЗЮМЕ

Дегенеративные заболевания (ДЗ) опорно-двигательного аппарата (ОДА) – это возраст-ассоциированные состояния, связанные с функциональными нарушениями и снижением качества жизни (КЖ). В результате увеличения продолжительности жизни в Европе большое внимание уделяется изучению влияния этих заболеваний на КЖ. Термальная терапия (грязелечение, ванны, физические упражнения и т.д.) является подходящим методом лечения пациентов с хроническими ДЗ ОДА. Наш нарративный обзор направлен на оценку возможностей спа-терапии в отношении улучшения КЖ пациентов с хроническими ДЗ ОДА. Мы провели поиск рандомизированных клинических испытаний и научных работ в базе данных PubMed и Google Scholar с 2016 по март 2020 года. Мы включили

14 исследований, в которых оценивались методы спа-терапии у пациентов с остеоартрозом, ревматоидным артритом, хронической болью в плече и фибромиалгией. Несмотря на то, что следует учитывать ограничения исследования, на основе накопленных данных можно сделать заключение о возможности спа-терапии, особенно в сочетании с реабилитационными мероприятиями, значительно улучшить качество жизни пациентов с хроническим ДЗ ОДА.

Ключевые слова: спа-терапия, бальнеотерапия, грязелечение, качество жизни, реабилитация, упражнения, водные упражнения, здоровье, дегенеративные заболевания опорно-двигательного аппарата, остеоартроз; фибромиалгия, боль в пояснице.

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Introduction

Life expectancy is increasing among Europeans, by 2030 it is estimated that one person in four will be aged 65 years or over. Chronic Musculoskeletal Disorders (MSDs) are age-related conditions, linked to substantial functional impairment, decreased quality of life (QoL), and increased healthcare resource utilization. MSDs are ranked among the top three causes of disability in the world. As a result of the increased life expectancy, more and more attention has been focused on investigating the impact of physical and mental illness on QoL. A perceived good QoL, according with World Health Organization definition, is represented by an individual positive rating of themselves, their relationships with other people, and their environmental and cultural context [1].

Spa therapy is frequently used in patients with chronic MSDs. It can be combined with a wide range of rehabilitative therapy which include manipulations, aquatic exercises, massages, electrotherapy, LASER-therapy, etc.) and with strategies for health education and prevention [2]. This combined approach performed in thermal environment could be a new opportunity to treat many chronic MSD and to improve their QoL. Moreover, the favourable social atmosphere in thermal environment is suitable for an increased well-being and decreased anxiety among chronic MSD subjects.

Considering this, it is easy to understand how Spa therapy valuation is essential linked to the measure of QoL perceived by the patient before and after the treatment.

Our narrative review aims to assess if Spa therapy may improve QoL in patients with chronic MSDs.

Material and methods

Search strategy. Studies were found by screening PubMed and Google Scholar databases from 2016 up to March 2020. As keywords we have used Spa therapy, quality of life (QoL), balneotherapy, chronic MSDs, osteoarthritis (OA), low back pain (LBP), fibromyalgia.

Study selection. Studies were eligible if they were randomized controlled trials (RCT) or clinical trials; Spa therapy had to be the intervention under study.

Results

In total, 14 studies were selected based on title and abstract. Regarding OA, Zwonlinska et al. [3] evaluated the short and long-term effects of thermal treatment in people with OA on their QoL and perception of pain. Seventy patients with generalized OA underwent comprehensive Spa treatment for 3 weeks. Statistically significant improvements were observed in pain at Visual Analogue Scale (VAS) and in the World Health Organization Quality of Life WHOQOL-BREF questionnaire regarding the domain of social relations and environment. Focalizing on OA of the hips and the knees, Hanzel et al. [4] investigated the effects of a 3-week-long balneotherapy-

based rehabilitation program in mineral-rich water or in tap water. During the treatment period, patients received a 30-min underwater jet massage in a bathtub, five times a week. One patient group received jet massage in a bathtub containing mineral water; the other group received the same treatment in tap water. Range of movement (ROM) of the involved joints, Western Ontario and McMaster University Osteoarthritis Index (WOMAC) score, and VAS were determined before and after the last treatment and at 3-month follow up, whereas Short Form Health Survey (SF-36) was filled in before the first and after the last treatment. Treatment with the thermal mineral water significantly improved ROM, WOMAC and SF-36 scoring compared to tap water intervention.

Dilekçi et al. investigated whether balneotherapy applied in combination with physical therapy has a more positive effect in patients aged 65 years and older with knee OA compared to physical activity alone. A total of 305 individuals were randomized into two groups, the first group was treated only with physical activity, the second one applied physical activity and balneotherapy. Assessments were made using VAS-pain, Euro QoL-5D (EQ-5D) 3L scales, WOMAC score, Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F) scale, Epworth Sleepiness scale and the Outcome Measures in Rheumatology-The Osteoarthritis Research Society International set of responder criteria for OA (OMERACT-OARSI) at the beginning and at the end of treatment. Balneotherapy combined with physical therapy demonstrated more effective than physical therapy alone in improving QoL. Reducing pain, especially, positively contributes to functionality, QoL, fatigue and sleepiness of knee OA patients [5]. Also another randomized controlled investigator-blinded study [6] evaluated the effects of balneotherapy in addition to physical activity in patients with hip OA. A group received balneotherapy for 3 weeks in addition to home exercise therapy, while the control group received exercise therapy alone. The WOMAC Likert 3.1 index and the EQ-5D self-administered questionnaire were completed three times during the study: before the first treatment, at the end of the 3-week treatment course, and 12 weeks later. The difference between the two groups was significant after 12 weeks in point of EuroQoL-visual analogue scales (EQ-VAS).

In patients who underwent hip arthroplasty for severe OA, a recent study evaluated the feasibility and the effectiveness of an intensive thermal rehabilitation program. Early after total hip arthroplasty, 12 patients aged between 50 and 85 years performed a 2-week thermal rehabilitation program, which consisted of education and physical rehabilitative measures. After 2 weeks of thermal treatment, hip flexion and abduction improved significantly and there was a positive impact on QoL. However, there was no statistically significant reduction in pain [7].

Concerning mud therapy and its application in OA, a RCT evaluated the cost-effectiveness of mud-bath therapy in addition to usual treatment compared to usual treatment alone in 103 patients with bilateral knee OA. The EuroQoL 5-domain QoL questionnaire was administered at baseline, after 2 weeks, and at 3, 6, 9, and 12 months. Patients in the mud-bath therapy group accrued better mean Quality-Adjusted Life Years (QALYs) compared to the control group [8]. Both mud therapy consecutive and intermittent sessions in patients with knee OA seems to be beneficial in QoL improving. A randomized, controlled, single-blind clinical trial enrolled fifty patients diagnosed with knee OA divided into two groups. All patients were given a total of ten sessions of balneological treatment consisting of hydrotherapy and mud pack therapy. The first group received consecutive treatment for 2 weeks, while the second group received intermittent treatment for 5 weeks. Local peloid packs at 45 °C were applied for 20 min, after a tap water (38°C) bath. Evaluations were conducted before, after treatment, and at 12th week of post-treatment by VAS scale, WOMAC Index, and SF-36 questionnaire. Both balneological treatment regimen had statistically significant clinical effects as well as effects on the QoL. Patients' well-being continued at 3 months, except for joint stiffness (WOMAC), role-emotional (SF-36), and vitality (SF-36) in the first group and for mental health (SF-36) in both groups [9].

Another randomized controlled single-blind pilot study [10] investigated the effects of peloid therapy on patients with hand OA. Thirty-three patients underwent peloid therapy over 2 weeks and home exercise program, whereas a control group (n = 30) received only the home exercise program. Patients were evaluated just before, and 2, 6 weeks after the start of the study with VAS score, Australian/Canadian Hand Osteoarthritis Index (AUSCAN), Health Assessment Questionnaire (HAQ), hand grip strength (HGS), and pinch strength (PS). Statistically significant improvements were observed in all parameters assessed at 2-6 week follow up in the group who underwent mud therapy.

In a prospective controlled unblinded randomly study, Santos et al. [11] aimed to determine whether Spa therapy plus pharmacological treatment offers any benefit in QoL as compared to pharmacological treatment alone in patients with rheumatoid osteoarthritis. Health Assessment Questionnaire without Disability Index (HAQ-DI) at the end of the treatment (21 days) and after 3 months was significantly improved in the Spa group.

To determine whether Spa therapy has a beneficial effect on pain and disability in patients with chronic shoulder pain, a single-blind randomised controlled clinical trial including patients with chronic shoulder pain due to miscellaneous conditions was performed. One hundred eighty-six patients were randomised into two groups: Spa therapy group (18 days of standardised treatment combining thermal therapy together with supervised mobilisation in a thermal pool) and controls (Spa therapy delayed for 6 months). Spa therapy was well tolerated with a significant impact on SF-36 components and also provided a statistically significant benefit on pain and function. [12]

Regarding LBP, a RCT that examined the effects of moderate mountain exercise and Spa therapy on orthopaedic and psychophysiological parameters on 80 patients with LBP, the group of patients who underwent balneotherapy showed significant improvements in pain, some orthopaedic parameters, HRQL and mental well-being. [13] Gáti et al. evaluated in a follow-up study 105 patients suffering from chronic LBP. The control group (n = 53) received the traditional

musculoskeletal pain killer treatment, while the target group (n = 52) attended thermal mineral water treatment for 3 weeks. The following parameters were measured before, right after and 9 weeks after the end of therapy: the intensity of LBP at rest and during activity through VAS, Oswestry Disability Index, and EuroQual-5D. All the parameters improved significantly in the group who underwent balneotherapy by the end of the treatment, and this improvement persisted during the follow-up period [14]

In fibromyalgia syndrome, in a prospective, randomized, controlled, double-blind trial with a 6-month follow-up, 100 patients were randomized to receive a cycle of balneotherapy with highly mineralized sulfate water or with tap water. Clinical assessments were performed at screening visit, at basal time, and after treatment (2 weeks, 3 and 6 months). The primary outcome measures were the change of global pain on the VAS scale and Fibromyalgia Impact Questionnaire total score (FIQ-Total) from baseline to 15 days. Secondary outcomes included Widespread Pain Index, Symptom Severity Scale Score, Short Form Health Survey, State-Trait Anxiety Inventory (STAI), and Centre for Epidemiologic Studies Depression Scale. In the balneotherapy group, there was a significant improvement of VAS and FIQ-Total at the end of the treatment that persisted until 6 months, while no significant differences were found in the control group. Similar results were obtained for the other secondary outcomes except for the STAI outcome [15].

Discussion and conclusion

An improvement of QoL, that nowadays represents one of the main goals in health management, seems to be linked to Spa therapy in different types of chronic MSDs. Results of quantitative analysis favoured balneological interventions in adjunct to rehabilitation treatment compared to standard treatment alone when evaluating effects on overall QoL of patients with chronic MSDs.

Patients with chronic MSDs such as OA, LBP, fibromyalgia, etc. show beneficial on pain, social function, disability, psychophysiological parameters (anxiety, stress, mood, etc.) when undergoing treatment which include traditional Spa therapy, especially when associated with rehabilitation like exercise. This beneficial effect seems to be maintained even during the following period (3-6 months). Findings show that real balneological interventions (thermal hot mineral baths or mud/peloid packs) were significantly better than sham balneological interventions (tap water immersion/hot packs) in improving pain as a QoL item. This difference was probably due to specific (hydromineral and crenotherapeutic) mechanisms of action of thermal mineral waters and therapeutic muds/peloids with their chemophysical properties, which can modulate endocrinological changes responsible for inflammation and pain reduction [16].

Spa therapy can be combined with a broad spectrum of rehabilitation treatments (electrotherapy, massage, manipulation, underwater-exercise, ultrasound therapy, laser treatment, hot and cold applications, etc.) and with health education or prevention strategies but from the study included in our research it didn't allow to precisely estimate to what extent each single intervention interfered with the others when considering QoL outcomes. Moreover, the patients who can stay at a thermal centre during the entire spa therapy period are the ideal subjects for education and prevention programmes in lifestyle medicine, which is an evidence-based therapeutic approach used to prevent, treat, and, oftentimes, reverse the lifestyle-related, in many chronic MSDs.

Modern thermal Centres are suitable settings for rehabilitation and education interventions, thanks to improved provision of care and technical-therapeutic amenities and equipment, which foster synergies and therapeutic associations which would not be feasible in any other type of facility.

In conclusion, we believe global approach that include traditional thermal therapy and rehabilitation combined with the SPA environment could be the ideal intervention, suitable to treat people with chronic MSDs. The comprehensive rehabilitation model based on the biopsychosocial approach

performed in a more “ecologic” and “pleasant” setting such as a thermal setting can produce advantages for health promotion and QoL in patients with chronic musculoskeletal conditions, especially for older patients. Further investigation is needed to better understand which QoL items are more likely to ameliorate in response to balneological and rehabilitative therapy.

Conflict of interest

We declare no conflicts of interest in the authorship or publication of this contribution.

REFERENCES

1. Alborz A. The Nature of Quality of Life: A Conceptual Model to Inform Assessment. *Journal of Policy and Practice in Intellectual Disabilities*. 2017; (14): 15 – 30. DOI: 10.1111/jppi.12225
2. Masiero S. Thermal rehabilitation and osteoarticular diseases of the elderly. *Aging Clin Exp Res*. 2008; 20(3): 189 – 194.
3. Zwolinska J., Weres A., Wyszynska J. One-Year Follow-Up of Spa Treatment in Older Patients with Osteoarthritis: A Prospective, Single Group Study. *Biomed Res Int*. 2018. DOI: 10.1155/2018/7492106.
4. Hanzel A., Horvát K., Molics B., et al. Clinical improvement of patients with osteoarthritis using thermal mineral water at Szigetvár Spa—results of a randomised double-blind controlled study. *Int J Biometeorol*. 2018; 62(2): 253 – 259. DOI: 10.1007/s00484-017-1446-6
5. Dilekçi E., Özkük K., Kaki B. Effect of balneotherapy on pain and fatigue in elderly with knee osteoarthritis receiving physical therapy: a randomized trial. *Int J Biometeorol*. 2019; 63(12): 1555 – 1568. DOI: 10.1007/s00484-019-01768-0
6. Kovács C., Bozsik Á., Pecze M., et al. Effects of sulfur bath on hip osteoarthritis: a randomized, controlled, single-blind, follow-up trial: a pilot study. *Int J Biometeorol*. 2016; 60, 1675–1680. <https://doi.org/10.1007/s00484-016-1158-3>
7. Masiero S., Pranovi G., Di Pumpo M., et al. Does aquatic thermal therapy improve quality of life after total hip replacement? A retrospective preliminary pilot study. *Int J Biometeorol*. 2020. DOI: 10.1007/s00484-019-01846-3
8. Ciani O., Pascarelli NA., Giannitti C., et al. Mud-Bath Therapy in Addition to Usual Care in Bilateral Knee Osteoarthritis: An Economic Evaluation Alongside a Randomized Controlled Trial. *Arthritis Care Res (Hoboken)*. 2017; 69(7): 966 – 972. DOI:10.1002/acr.23116
9. Özkük K., Gürdal H., Karagülle M., Barut Y., Eröksüz R., Karagülle M.Z. Balneological outpatient treatment for patients with knee osteoarthritis; an effective non-drug therapy option in daily routine? *Int J Biometeorol*. 2017; 61(4): 719 – 728. DOI:10.1007/s00484-016-1250-8
10. Kasapoğlu Aksoy M., Altan L., Eröksüz R., Metin Ökmen B. The efficacy of peloid therapy in management of hand osteoarthritis: a pilot study. *Int J Biometeorol*. 2017; 61(12): 2145 – 2152. DOI:10.1007/s00484-017-1419-9
11. Santos I., Cantista P., Vasconcelos C., Amado J. Balneotherapy and Rheumatoid Arthritis: A Randomized Control Trial. *Isr Med Assoc J*. 2016; 18(8): 474 – 478.
12. Chary-Valckenaere I., Loeuille D., Jay N., et al. Spa therapy together with supervised self-mobilisation improves pain, function and quality of life in patients with chronic shoulder pain: a single-blind randomised controlled trial. *Int J Biometeorol*. 2018; 62(6): 1003 – 1014. DOI: 10.1007/s00484-018-1502-x
13. Huber D., Grafetstätter C., Proßegger J., et al. Green exercise and mg-ca-SO4 thermal balneotherapy for the treatment of non-specific chronic low back pain: a randomized controlled clinical trial. *BMC Musculoskelet Disord*. 2019; 20(1): 221. DOI:10.1186/s12891-019-2582-4
14. Gáti T., Tefner I.K., Kovács L., Hodosi K., Bender T. The effects of the calcium-magnesium-bicarbonate content in thermal mineral water on chronic low back pain: a randomized, controlled follow-up study. *Int J Biometeorol*. 2018; 62(5): 897 – 905. DOI:10.1007/s00484-017-1491-1
15. Fioravanti A., Manica P., Bortolotti R., Cevenini G., Tenti S., Paolazzi G. Is balneotherapy effective for fibromyalgia? Results from a 6-month double-blind randomized clinical trial. *Clin Rheumatol*. 2018; 37(8): 2203 – 2212. DOI:10.1007/s10067-018-4117-z
16. Antonelli M., Donelli D., Fioravanti A. Effects of balneotherapy and spa therapy on quality of life of patients with knee osteoarthritis: a systematic review and meta-analysis. *Rheumatol Int*. 2018; 38(10): 1807 – 1824. DOI: 10.1007/s00296-018-4081-6. Epub 2018 Jun 12.



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