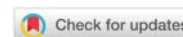


EFFECTIVENESS OF PHYSIOTHERAPY FOR MUSCO-SKELETAL DISORDERS AND THE ROLE OF REMOTE PHYSIOTHERAPEUTIC INTERVENTIONS

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Abstract: For patients with musculoskeletal diseases, physiotherapy is a safe and efficient treatment option that can help them manage their symptoms and enhance their health. In primary care, physiotherapists aid in the diagnosis, cure, and manage of a broad spectrum of acute and chronic disorders, as well as promote physical exercise, mobility, and function. Physiotherapists in basic medical teams maximize patients' mobility in accordance with their lifelong needs. This brief study emphasizes the significance of musculoskeletal disorders treatable with physiotherapy. Physiotherapy interventions, when delivered remotely through e-Health platforms, have gained prominence as accessible and effective tools for managing musculoskeletal conditions. These interventions provide patients with valuable resources for self-management, while greatly used to improve everyone's quality of life. At the same time, helping to moderate the challenges that this load can create on healthcare systems. The use of telehealth in physiotherapy offers opportunities for personalized care, continuous monitoring, and the implementation of evidence-based interventions. The relevancy of this approach is mainly noticed when put in the context of the COVID-19 pandemic, where the need for remote healthcare delivery has become paramount. Telehealth allows patients to receive timely care and support while adhering to social distancing guidelines. The concept of adherence to eHealth technology in physiotherapy is crucial for ensuring the success of remote interventions. Understanding when and how patients engage with eHealth platforms can guide the development of more effective interventions. It is essential to explore factors that influence patient adherence to technology-driven physiotherapy interventions to optimize their benefits. As healthcare systems worldwide face increasing demands, the implementation of remote physiotherapeutic e-Health interventions can help alleviate the burden by offering scalable and cost-effective solutions. These interventions have the potential to reach a broader patient population and improve access to care for individuals with musculoskeletal disorders. The evaluation of the effectiveness of these remote interventions is essential to provide evidence-based guidance for their integration into clinical practice. By conducting systematic reviews and meta-analyses, researchers can contribute valuable insights into the outcomes and impact of telehealth-based physiotherapy on pain management and overall patient well-being.

Keywords: *physiotherapy; musco-skeletal disorders; remote physiotherapeutic' e-health.*

Field: Medical sciences and Health.

1.INTRODUCTION

According to Briggs, A.M., (2018) et al., it is around 150 diseases related to the locomotor system are associated with musculoskeletal disorders, which affect more than 50% of the population. Musculoskeletal problems are now the second-largest issue at the moment of years lived with disability, having seen a 61.6% increase in DALYs globally between 1990 and 2016. Toonders (2022) says that pain is the most frequent complaint among patients with musculoskeletal disorders. A reduction in daily functioning is brought on by this musculoskeletal pain based on the research from Dueñas, M., et al. (2016). Musculoskeletal diseases are problems that affect the body's muscles, bone, joints, and ligament tissues. One treatment option that is useful for musculoskeletal disorders is physiotherapy. By employing a wide range of strategies, including exercise, muscle relaxation, and education, physiotherapy works to accomplish its goals of alleviating pain, enhancing function, and preventing further injury. Physiotherapy has been demonstrated to be useful in treating a wide variety of musculoskeletal problems, including low back pain, arthritis, and rotator cuff injuries, according to a number of studies. In addition, physiotherapy has the potential to assist in the enhancement of general physical function as well as quality of life. In general, physiotherapy is a therapeutic option for musculoskeletal diseases that is both safe and effective, and it can assist patients in better managing their symptoms while also improving their overall health and sense of well-being (Vanti, C., Pillastrini, P., & Monticone, M). According to Childs, J.D., et al (2005) all Specialists in the treatment of musculoskeletal conditions, physiotherapists help patients improve their ability to function normally. Hodges, P. W., & Smeets, R. J. (2015) found that in patients

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with musculoskeletal pain, the goal of physiotherapeutic treatment is to provide individualized patient care to develop pain management strategies, rehabilitate, and restore physical function through education, activities, and reassurance to engage in consistent physical activity. According to Alpay & Dumaij (2011) e-Health can be a helpful instrument for instruction, exercises, and encouragement, thus physiotherapists may utilize it in their treatment. E-health is the practice of providing individualized medical care over a distance using technology says Elbert, N. J., et al. (2014) in his review. Computers, cell phones, satellite communications, and other devices are examples of this technology based on the research from Moss, R.J., A. Süle, & S. Kohl (2019). Alpay & Dumaij (2011) found that Mobile health (mHealth) is a term that frequently refers to the specialized usage of smart or portable devices, such as the use of mobile applications. The moment of delivery can change in addition to the mode of delivery (i.e., computers, mobile, tablet). For example, e-Health may be employed in both the diagnostic and therapeutic processes (such as videoconferencing, online activities, and teaching). Interactive websites, internet-delivered programs, and mobile applications are just a few examples of the several forms of e-Health initiatives. Also, there are several approaches to deploy e-Health, either as a supplement to in-person treatment (i.e., blended care) or as a full substitute for physical consultations as a research from (Kloek, C., et al., (2017) found and as Barak & Proudfoot (2009) say as well in their research. All physiotherapeutic treatment had to be provided remotely during the 2019 new coronavirus (COVID-19) pandemic in a number of countries, including the Netherlands based on Kinross & Ghai (2020) statement. Patients with chronic pain continued to obtain care during this epidemic by using remote e-Health solutions. According to the literature that is currently available, traditional face-to-face care can sometimes be just as successful as or even somewhat more effective than e-Health says Seron (2021) on his paper. Uncertainty regarding the efficacy in various populations continues to be a problem, albeit Corso (2022). The usefulness of these remote e-Health therapies for patients with the prevalence of musculoskeletal complaints is yet unknown. Consequently, the objective of this study was to conduct a systematic evaluation of the literature on the impact of pain in patients with musculoskeletal illnesses and remote physiotherapeutic e-Health interventions.

2. METHODOLOGY: DATA COLLECTION AND DATA PROCESSING

The foundation of the search strategy consisted of varying configurations of keywords, free text, and medical subject headings relating to telemedicine, the Internet, treatments conducted via e-Health, musculoskeletal disorders, and physiotherapy. The exploration approach was initially established in PubMed and then adapted for use in Google Scholar before being applied to other online databases. The following were some of the keyword search and medical issue heading terms that were utilized during the search: (1) e-health / e-Health OR internet / Online computer OR telehealth / tele-rehabilitation, As well as (2) musculoskeletal problems OR physiotherapist, AND (3) assistance OR a randomized controlled study. The screening procedure was conducted with an emphasis on relevancy in addition to previously established inclusion and rejection criteria. Included in this study were controlled randomized trials of remote rehabilitation es in people who presented with problems related to the musculoskeletal system.

The following are the inclusion criteria for the research projects that were carried out: (1) the primary or additional outcome measure had to be related to pain (for example, physical pain, pain weeks, or pain-related impairment); and e-Health intervention strategies must be: (1) remote location transmitted, and (2) applied inside the field of physical therapy for patient populations who have musculoskeletal complaints. Patients do not have to go to the clinic to obtain their rehabilitation treatment because it is provided to them at a distance throughout an e-Health application. This is one of the addition criteria, which shows that interventions that fall within the physiotherapeutic scope are considered to be included. Exercise, education about pain, or any other form of treatment meant at reducing pain-related criticisms, such as reinforcement to participate in routine physical activity, might make up the therapy.

3. SYSTEMATIC ANALYSIS

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (abbreviated as PRISMA) are the tools that are used to conduct the analysis of the systematic results of the collected studies by Selçuk (2019). Articles that do not meet the criteria for recognition, filtration, validity, and, eventually, accessing the information needed are thrown out using a flowchart that focuses on the 2020 PRISMA checklist. Because of this, you can rest assured that only the items that are the most essential to the

conversation will be accessed. An exhaustive investigation was conducted on the body of work that was selected since, in addition to being relevant, it needed to be credible (figure1).

4. RESULTS

During data collection the investigation reveal 20 studies. The next step was the manual removal of duplicates. 3 duplicates were found and discarded the screened records got 17. Out of 17, studies 14 of them were classified for full text eligibility and the rest was discarded due to wrong language selection and unavailability of whole article. Out of 14 studies, 2 studies lacked specificity, 4 of them had different intervention and 2 of them were wrong article type (figure 1).

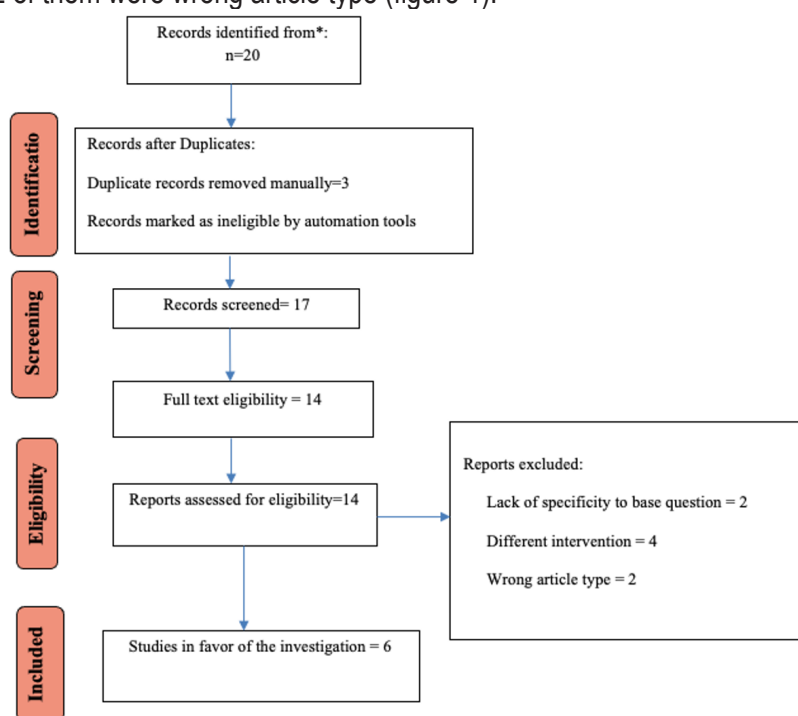


Figure 1: PRISMA Flowchart diagram of the screened studies.

5. DISCUSSION

The benefit of physiotherapy in musculoskeletal problems is that it gives tailored treatment programs depending on the needs of the individual. This can include a variety of exercises aimed at strengthening weak muscles, increasing range of motion and flexibility, and lowering the risk of any future injury. Physiotherapy may include manual therapeutic approaches such as massages and strengthening exercises, as well as treatments such as ultrasonography and electrical stimulation, in addition to exercise. Physiotherapy has been demonstrated in studies to be useful in the treatment of a wide range of musculoskeletal diseases, including backaches, neck pain, joint stiffness, and knee pain. According to a research study that appeared in the *Journal of Orthopaedic & Sports Physical Therapy*, physiotherapist methods such as exercise and manual therapy improved both function and pain in people with knee osteoarthritis says Deyle et al. (2020).

Similarly, a research study that appeared in the *Journal of Manipulative and Physiological Therapy* discovered that physiotherapy therapies improved both pain and function in people suffering from neck discomfort according to Miller et al. (2010). Another research study presented in the *Journal of Shoulder and Elbow Surgery* from Roy et al. (2009) discovered that physiotherapy therapies increased function and decreased pain in people suffering from shoulder pain.

This systematic review found insufficient evidence for the impact of e-Health on pain severity in individuals with back pain, regardless of how active the health professional was in the online intervention or which control group was utilized. There is no evidence that distant e-Health without the involvement of healthcare providers is more successful than face-to-face treatments in patients with chronic pain, although

there is modest evidence that it is more efficient than no treatment. In individuals with chronic pain, there is significant evidence that remote e-Health with minimum engagement of the healthcare professional is more beneficial than a control intervention. When compared to no treatment, there appeared to be a moderate effect of e-Health treatment with minimum engagement in pain reduction for individuals after total knee surgery. Toonders et al. (2022) found that there was no impact on the pain-related outcome in patients with arthritis and knee pain. When the between-group effect is considered, this comprehensive analysis finds no evidence of a link between low healthcare provider participation and no care in individuals with back pain. Yet, there is evidence that remote autonomy e-Health is more successful than face-to-face (standard care) treatments. Dario et al. (2017) found that that independent e-Health treatments were no more beneficial than standard therapy in those who had low back discomfort from another comprehensive evaluation. Due to the contradictory results in those suffering from low back pain, the therapies may be insufficiently personalized. When treatments are more tailored to individual needs and desires, gains can be obtained according to Hill et al. (2008). Because the inclusion of independent e-Health, combined care of face-to-face therapies needs careful assessment of whether a patient has ambition, access to digital facilities, and the capacity for information processing the comprehensive treatment principle can also aid personalized care as Kloek and Veenhof (2020) found,. The current study focused into remote e-Health treatments. Hall et al. (2010) says that because it has been demonstrated that a physiotherapist can positively impact treatment outcomes by offering constructive criticism, answering medical questions, and providing clear instructions for home training it may be useful to see what the effect of just the e-Health implementation is, rather than the impact of the physiotherapist, is with the studies included in the present studies. Different results has been discovered about the effectiveness of remote e-Health treatments for patients with chronic pain depending on the engagement of the healthcare professional and the control group. This study found that as the healthcare provider's online participation increases, so does the proof of the effectiveness of distant e-Health in comparison to traditional care. Unless there is limited involvement of the healthcare professional, autonomous e-Health is more efficient than no therapy but not more effective than normal care. This is consistent with earlier studies that have found no indication that autonomous remote e-Health is superior to standard care in those who have persistent pain based on research from de Oliveira Lima et al. (2021) other than its cost-effectiveness as Gaskin & Richard (2012) state. As a result, De La Torre-Díez, I., et al. (2015) found that while implementing e-Health in this group, it should be integrated into the interference, also known as blended care, to deliver effective treatment at a cheaper cost. In this systematic review, no main impact was detected in the group of osteoarthritic patients, patients with knee discomfort, or patients who had knee surgery. In spite of the small number of papers included in this systematic review, no effect was identified. Another reason is that the pain primary outcome might not be the most significant physical outcome for these individuals. When looking at additional outcome indicators, such as physical exercise, there is a strong long-term benefit in favor of remote e-Health. Sieverin & van Gemert-Pijnen (2017) argue that there may be a potential ceiling impact on the quantity of therapy a patients can receive beyond which additional treatment will no longer result in improved recovery. Furthermore, in the case of pain intensity, research by Sieverink et al (2017) suggests that the substance of the treatment is more significant than the form of delivery (i.e., in person or via e-Health). de Rooij et al., (2016). found that additionally, there are large within-patient variability in the progression of discomfort among individuals with knee osteoarthritis, therefore interpretation of these findings ought to be done with caution given the small sample size and limited amount of research.

6. CONCLUSIONS

Musculoskeletal disorders are problems that affect the bones, ligaments, muscles, as well as other connective tissues. Physiotherapy plays a crucial role in the treatment of these conditions. These problems can cause discomfort, stiffness, and decreased movement, which can hinder a person's ability to carry out daily tasks. Using a combination of activities, manual treatment, and education, physiotherapy therapies aim to relieve pain, enhance mobility, and improve general physical function. Among patients who suffer from chronic pain, it is important to be said that self-sufficient e-health is still better than providing no care at all, but it is not more effective than the general care a patient would get at a healthcare provider, unless there is only limited involvement from the healthcare provider.

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