

Original Article

Is physiotherapy an underused approach to prevent surgery in selective musculoskeletal disorders?

Junaid Amin¹, Sameer Gohir², Umer Qaiser³, Ammar A Siddiqui⁴, Freah Alshammary⁴ Mohammad Khursheed Alam⁵

Abstract:

Objectives: The purpose of the literature review was to appraise the evidence that an early physiotherapy intervention helps to prevent the surgery in selective musculoskeletal disorders. A search of Google Scholar, Web of Science, Scopus, and PubMed was carried out utilizing the terms (“physiotherapy”, “surgery” OR “exercise, surgery” OR “rehabilitation”, “surgery”).

Methods: The article titles and abstracts were screened for eligibility and included in the review. The recent literature evidently emphasized that physiotherapy has opted in selective musculoskeletal problems to avoid and delay surgeries. **Results:** Regardless of recommended conservative treatment option and effectiveness of physiotherapy, a massive gap can be observed between its evidence and practice. Conversely, overuse of diagnostic imaging, surgeries, and medications is present in clinical practice. In most of the clinical problems the long-term outcomes were reported the same with surgical and physiotherapy intervention. Likewise, patients can also get the advantage of better clinical outcome and cost-effectiveness with physiotherapy as compared to surgical intervention. **Conclusion:** The cost-effectiveness is an important factor in low-income countries where economic aspects of health care are highly considered. These advantages of physiotherapy should be considered by the clinicians, policymakers, patients, and included in the clinical guidelines.

Keywords: Conservative; Cost effectiveness; Non-Invasive; Early intervention; Exercise, Physiotherapy; Rehabilitation; Surgery

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Introduction:

Physiotherapy is considered as an adjunct therapy with other medical and surgical interventions to alleviate pain, improve quality of life, and restore patient's maximum movements and functions. This is achieved by using special therapeutic exercises, manual techniques and modalities.^{1,2} In many

cases physiotherapy is a highly effective, evidence-based, and non-invasive approach that can be a good alternative approach for the cases where the need for the surgery can be avoided. Despite the availability of non-invasive approach many times it has been observed that this option is overlooked.³ The recent survey conducted by World Confederation Physical

1. Junaid Amin, Department of Physiotherapy, College of Applied Medical Sciences, University of Ha'il, Saudi Arabia.
2. Sameer Gohir, Visiting Lecturer, School of Medicine, National institute for health Research Biomedical Research Centre, University of Nottingham, United Kingdom.
3. Umer Qaiser, PhD Student / Consultant Physiotherapist, School of Health Sciences, University of Southampton, United Kingdom.
4. Ammar A Siddiqui
5. Freah Alshammary
Department of Preventive Dentistry, College of dentistry, University of Ha'il, Saudi Arabia.
5. Mohammad Khursheed Alam, Orthodontic Department, College of Dentistry, Jouf University. Sakaka, Saudi Arabia.

Correspondence to: Dr Junaid Amin, Department of Physiotherapy, College of Applied Medical Sciences, University of Ha'il, Saudi Arabia. P.O.Box: 2440, Zip Code: 81451. E-mail: junaid768@hotmail.com

Therapy (WCPT) completed by 89 WCPT members reported that direct access and patient self-referral to physiotherapy is available in 48 countries.⁵ It is well evident that physiotherapy is the first line of treatment option among the conservative options for many musculoskeletal problems.^{4,5} However, the primary concern is that this approach is quite often unnecessarily disregarded as primary treatment option despite evidence support and there is no question regarding the effectiveness. The cost of treatment, complications of the surgery, and patients health can be more guarded by its use. Hence physiotherapy is not only an alternative approach but also a very good medium for the rehabilitation of the patient and improves their health-related quality of life without surgical intervention.

Based on our knowledge the existing literature indicates pre and post-operative effectiveness of physiotherapy,⁶ despite this fact surprisingly its practice is quite limited. In many cases, physiotherapy is the best option/alternative to surgery. Additionally, physiotherapy is an alternate option for patients who are trying to avoid surgery or long-term use of pain-relieving medications. The idea of surgery may be overwhelming, expensive (when applicable), and potentially inconvenient to many especially when long-term the recovery period is required post-operatively.⁷ Consequently, physiotherapy has a psychological advantage over surgery not having any stress and anxiety among patients while thinking or taking physiotherapy intervention.

Moreover, if pathological conditions can be managed with the physiotherapy intervention then it can save the cost of surgery and the risk of post-operative complications. Physiotherapists work in a range of settings including outpatient, indoor, tele-consultation, and patients own home.⁸ The structured, home-based physiotherapy exercises blended with weekly outpatient visits can keep the patients motivated, increase their compliance with physiotherapy treatment and can further reduce the cost of unnecessary surgeries or post-operative complications.⁹

Literature review:

The long term clinical outcomes of many musculoskeletal problems were similar whether with physiotherapy or surgical intervention.¹⁰ Looking at the shoulder pathologies, up to 75% of patients with

atraumatic full-thickness rotator cuff tears were able to alleviate their symptoms without surgery.¹¹ A recent systematic review, the treatment of subacromial pain syndrome (SAPS) compared with exercise or placebo surgery and subacromial decompression surgery.^{12,13} The findings of the study reported no difference in the benefits of surgery as compared to exercise and placebo surgery to manage pain, improve function and quality of life. Physiotherapy has a vital role in the prevention of deformities. The manipulation under anaesthesia (MUA) can be prevented in the frozen shoulder with early diagnosis and physiotherapy intervention.¹⁴ Likewise, the recurrence of frozen shoulder can only be minimized with early physiotherapy interventions after manipulation under anesthesia.¹⁵

In a prospective cohort study conducted on participants with lumbar disc herniation, no clinical difference was observed between participants having surgery or conservative management.¹⁶ Correspondingly, randomized controlled trials (RCTs) comparing surgical and conservative management in sciatic pain reported no difference in pain and disability outcomes when followed up to 5 years.¹⁷ In a clinical study, revision rates and complication incidence in anterior cervical discectomy and fusion procedures were explored, 1 of 10 cases underwent to a second surgery in two years or less.¹⁸

In selective sports-related injuries, with early physiotherapy intervention can prevent the need for surgery altogether. A research study comparing exercise to arthroscopic partial meniscectomy concluded no difference between exercise and surgery after two years of follow-up.² In a systematic review and meta-analysis, the arthroscopic surgery for meniscal tear reported with a significant improvement in the short term or the long-term pain scores. In such cases, the first line of the treatment option should be conservative management.^{19,20} A study conducted on middle-aged patients reported the same benefits of exercise therapy as of surgical intervention in meniscal tears.²¹ In early stages of knee osteoarthritis, supervised physiotherapy program and routine follow up can prevent the advancement of osteoarthritis and hence total knee replacement surgeries can be delayed or avoided. Moreover, another RCT was conducted involving multicenter to compare the outcomes of surgery

versus conservative with physical therapy for a meniscal tear and osteoarthritis, and they reported that 70% of patients in the conservative group resulted in managing their conditions without surgical intervention.²²

In non-communicable diseases (NCD), physiotherapy contributes a major part to avoid the surgery by preventing the complications of the diseases- for

example, early targeted physiotherapy intervention in osteoporosis can help by preventing secondary complications, such as fractures, deformities, and falls. The fall prevention program delivered by physiotherapists is designed to decrease the risk of fall and avoiding potential fractures.²³ A randomized clinical trial conducted on patients with pelvic floor disorders reported physiotherapy an appropriate,

Table 1: Characteristics of the included studies

	Authors	Study design	Follow up time (Maximum)	Diagnosis	Surgical procedure	Outcomes measures	Conclusion
1	Lähdeoja, Tuomas, et al. (2019) ¹²	a systematic review with meta-analysis	One year	subacromial pain syndrome	Subacromial decompression surgery	health-related quality of life	No significant advantage of surgery as compared with placebo surgery or exercise therapy
2	Khan, Moin, et al. (2014) ²⁰	a systematic review and meta-analysis	2 years	degenerative tears of the meniscus	Arthroscopic surgery for degenerative tears of the meniscus	Pain scores	Did not reported a significant improvement in the short term or the long-term pain scores.
3	Lee, Dong-Yeong, et al. (2018) ¹⁹	a meta-analysis	5 years	Meniscal Injury	Arthroscopic meniscal surgery	Pain scores	Did not reported a significant improvement in the short term or the long-term pain scores with surgical intervention
4	Egberts, Kristine, et al. (2012) ²⁵	A systematic review	4.5 years	Obesity	Bariatric surgery	BMI	the exercise adjunct with bariatric surgery was found quite effective in weight loss in severely obese patients
5	Katz, Jeffrey N., et al (2013) ²²	A multicenter RCT	6 months	a meniscal tear and osteoarthritis	Arthroscopic Partial Meniscectomy	WOMAC index & physical-function score	No difference in functional improvement were in two groups.70% of patients in conservative group resulted in managing their conditions without surgical intervention and 30% underwent surgery.
6	Kise, Nina Jullum, et al. (2016) ²¹	RCT	Two years	degenerative meniscal tear	arthroscopic partial meniscectomy	knee injury and osteoarthritis outcome score (KOOS)	the same benefits of exercise therapy as of surgical intervention
7	Lequin, Michiel B., et al. (2013) ¹⁷	RCT	5 years	Sciatica	Spinal decompression	Pain and Disability Score	no difference in pain and disability outcomes when followed up to 5 years
8	Eftekhari, Tahereh, et al. (2014) ²⁴	RCT	2 months	Impaired sexual function in pelvic floor disorder	standard rectocele repair and prineorrhaphy	The female sexual function index (FSFI)	Physiotherapy was reported an alternative and great choice for treating sexual dysfunction
9	Kuhn, John E., et al. (2013) ¹¹	a multicenter prospective cohort study	2 years	atraumatic full-thickness rotator cuff tears	Rotator cuff repair	Patient-reported outcomes	up to 75% of patients were able to alleviate their symptoms without surgery
10	Gugliotta, Marinella, et al. (2016) ¹⁶	a prospective cohort study	2 years	lumbar disc herniation	Spinal decompression	Physical function, neurogenic symptoms, quality of life and patient-reported back pain	Surgical group showed prompt relief of symptoms but did not find a clinical benefits in long-term follow up over conservative group

alternative and optimal choice for treating sexual dysfunction as compared to surgery.²⁴ The long term effect of some surgeries are unclear such as bariatric surgery but the exercise adjunct with bariatric surgery was found quite effective in weight loss in severely obese patients.^{25,26} Indeed, the best way to avoid second surgery is not to have a first, or before scheduling that surgery consult a physical therapist. Table 1 detailed the characteristics of included studies.

Recommendations:

- Physiotherapy intervention is a great choice in the early stage of selective musculoskeletal problems to delay or prevent the future need for surgery. Likewise, the long-term clinical outcomes in certain cases with physiotherapy and surgery are the same. Based on the evidence mentioned above, the use of physiotherapy in selective musculoskeletal problems at an early stage has a substantial effect to prevent any progression of the pathology. In such cases, it is highly recommended to use supervised physiotherapy programs as the first line of intervention with proper patient selection, assessment and intervention.
- Physiotherapy is an underused approach by professionals and patients. The gap between evidence and practice can be reduced with increasing awareness, tele-rehabilitation, the multidisciplinary, and interdisciplinary approach of intervention. These steps will lead to fewer surgeries and less health-related socioeconomic burden on the whole society.

Conclusion:

Physiotherapy is very effective in preventing as well as delaying surgical intervention in selective cases. Enabling adaptation and modification through supervised exercise therapy can be an effective strategy of choice for selected patients. The evidence has shown that rigorous intervention for patients with neurosurgical, orthopedics or musculoskeletal related symptoms showed enhanced recovery, cost-effective, and improved clinical outcomes by post physiotherapy input.

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Author's contribution:

Data gathering and idea owner of this study: JA, SG, UQ, AAS, FA and MKA

Study design: JA, SG, UQ, AAS

Data gathering: JA, SG, UQ, AAS

Writing and submitting manuscript: JA, SG, UQ, AAS, FA and MKA

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