

A Comprehensive Examination of App-Based Rehabilitation for Back Pain

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Introduction

Cell phones and their related applications are utilized regularly by patients and clinicians the same. Even though the technology is widely available, it has yet to be used to help with rehabilitation. Given how difficult it is for patients to get healthcare right now, the SARS/CoV-2 pandemic has given us a chance to get them in faster. The purpose of this study was to conduct a comprehensive literature review comparing smartphone rehabilitation apps to traditional physiotherapy for back pain. Following the PRISMA guidelines, we searched the Medline/PubMed and Google databases using the search terms "APP" and "Orthopaedic" or "Neurosurgery."

Description

All prospective studies that looked into the effects of rehabilitation on back pain or after spine surgery were included.

Nine studies met the inclusion criteria and looked at 7636 patients. Of those, 92.4% (n=7055/7636) were placed in the interventional group with a follow-up period ranging from four weeks to six months. With the exception of one study, all included data on patients who had back pain for an average of 19.6 to 11.6 months. In all studies, the VAS-pain score did not differ significantly between the intervention and control groups ($p=0.399$ before intervention and $p=0.277$ after intervention). In comparison to the control group, only one research group found a significantly higher improvement in PROMs for the application group, while the remaining groups produced results that were comparable [1].

Patients with back pain can easily supplement or replace traditional physiotherapy with application-based rehabilitation programs. Patients who are self-dedicated and obedient will benefit from rehabilitation due to the widespread use of smartphones in everyday activities. Patients with chronic back pain and those in the post-operative phase of spinal surgery frequently require rehabilitation. These rehabilitation services have traditionally been provided through in-person consultation with patients. Digitalization of healthcare delivery has accelerated rapidly since the emergence of SARS-CoV2. The pandemic has brought to light the advantages of smartphone-based remote rehabilitation programs. In July 2022, the number of smartphone owners worldwide surpassed 6 billion. Over a third of Americans media time in 2021 will be spent on mobile phones, with smartphones accounting for 72.3% of that. The widespread use of smartphones and their apps presents an opportunity to incorporate their use into clinical practice and contribute to the reduction of patient barriers to health care access [2].

In healthcare, apps are increasingly being used to improve communication,

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record patient outcome data, and sometimes measure outcome data. 81% of 146 patients surveyed in a neurosurgical waiting room expressed interest in using a postoperative communication and monitoring app. These patients had not previously had surgery. According to a 2015 study, there were 72 distinct apps with a focus on spine surgery, 45 of which could be downloaded for free; however, only 56% had identified medical professionals who had contributed to their content or development. Tele rehabilitation is supported by evidence in orthopaedics in general; however, there is a gap in the literature when it comes to specific references to app-based rehabilitation for back pain and spine surgery. The purpose of this systematic review is to provide a summary of the existing data and literature regarding the results of app-based rehabilitation programs for back pain and spine surgery.

In patients who have been experiencing back pain for a median of 19.6 to 11.6 months, there are no significant differences between application-based rehabilitation and standard physiotherapy (the control group). In the majority of studies, the method of rehabilitation did not significantly improve the pain. It was impossible to carry out a true meta-analysis because of the diversity of the data. Applications in medical services presently incorporate diabetes, weight reduction, emotional wellness, discourse issues and cardiovascular sicknesses, which should be evaluated by the substance quality and benchmark the mediations against best practice rules. One of the major obstacles to app-based rehabilitation success is adhering to a postoperative rehabilitation program. Typically, compliance is low, and up to 30% of students miss classes. To achieve a satisfying result, program engagement must be consistent. App-based rehabilitation has been shown to be an effective method for reducing pain in patients who are self-motivated and highly observant. A sensor could be used to give patients live feedback, such as measuring the muscle strength used, rather than presenting various exercises [3].

In the investigated studies, a wide range of apps were utilized. According to the authors, the Kaya App employs comprehensive, multidisciplinary, evidence-based pain treatment in accordance with international disease management guidelines. Additionally, the pain intensity scores were significantly lower than those of the control group. Because it appears to be a quick, cost-effective treatment, the app could also be used while patients are waiting to be admitted to the pain clinic. The Snap care app, on the other hand, was made to keep track of the patient's symptoms and level of daily activity. As a result, individual activity objectives and home exercises are presented. After each activity session, these are chosen based on the baseline health data, PROM scores, and pain levels. Similarly, Fitbit reports on goals related to physical activity and monitors individual goals and physical activities. Additionally, a health coach is able to discuss the participant's goals and progress and provides regular telephone feedback. Users receive additional individual healthy tips. Self-monitoring of cognitive and behavioural strategies to improve self-care and back pain prevention behaviours is provided by FitBack, an online app. Exercises are chosen for their safety and minimal equipment, so they can be done without supervision.

Machado and other did a search and discovered 61 apps in 2016 that were available. The larger part offered a mix of biomechanical activities, yoga or reinforcing/extending. Those which scored the largest number of focuses suggested a mix of biomechanical practices including reinforcing, extending, centre dependability or McKenzie works out. One shortcoming illustrated was the sketchy proof based mediation, as the greater part had not been tried in a randomized controlled preliminary. Additionally, the authors mentioned that neither in-app nor online user ratings were correlated with the apps quality. As a result, they came to the conclusion that user ratings are ineffective

measures of app quality. This could be related to the absence of a pre-exercise questionnaire that assessed preconditions like comorbidities or prior surgeries. Additionally, the users varying levels of experience should be taken into account [4].

Implementing app-based rehabilitation programs in community healthcare requires additional considerations. There was no mention of the cost of downloading the app; some apps require a single payment to download, while others use a subscription model. Additionally, despite the widespread use of smartphones, the apps interface and usability must take into account the intended audience. Last but not least, despite the fact that app-based rehabilitation is an exciting development in digital healthcare, the safety of individuals participating in unsupervised activities must be prioritized. When performing certain exercises on its own, an app would need to take into account the possibility of falls. 6468 patients comprised the largest study cohort examining the impact of app-based rehabilitation on back pain. The groups benefited from the authors report of a high completion and engagement rate. Within the first 12 weeks, the average improvement in VAS pain was 68.5% and 78.6% completed the program on a regular basis. The standardized mean difference for back pain was 1.37, which was the same for both sexes. Sadly, the study did not include a control group and did not provide any specific results because it was a longitudinal observational study [5].

Conclusion

This research has several limitations. We didn't include "physical therapy" in the search terms because we thought it would bring up articles about nutritional apps or general back pain. Due to the heterogeneity of the data and the low quality of the individual studies (range of bias scores: 1–3/5), a meta-analysis was not carried out. However, the most significant examples in this

field can be found in these studies. The visual analogue scale of pain remained constant across the studies. In addition, it took anywhere from four weeks to six months to follow up. In addition, the SF-36, Likert, Oswestry Disability Index, current symptoms, PHQ-9, and Korff score were utilized as patient-reported outcome measures. Last but not least, it should be mentioned that no matter what rehabilitation activities are done, chronic back pain may go away on its own in time. However, given that rehabilitation activities may accelerate rehabilitation, we anticipate a significant difference between the two groups.

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