



CHRONIC PAIN MANAGEMENT: DIGITAL TOOLS FOR SUPPORT

Abstract

Chronic pain is a debilitating condition that affects nearly one-fourth of the global population. It severely impacts an individual's quality of life and hinders their daily activities. Managing chronic pain, however, requires personalized and participatory care, which is often challenging without constant and consistent direct supervision by a health care professional.

In this point of view, we outline how digital health platforms can help patients self-manage chronic pain. We examine the role of digitally-enabled tools to monitor pain, exercise, and treatment goals, allowing patients to positively alter their quality of life. Further, we evaluate the key features needed to ensure the successful adoption of such digital tools by chronic pain patients.

Introduction

Chronic pain is a significant health care concern, and is estimated to affect 20% of individuals worldwide (1). In addition to the costs of medical treatment, loss of wages and productivity are among the many indirect costs incurred owing to chronic pain (2).

Chronic pain can arise from injury, surgery, musculoskeletal conditions, or cancer and may result in mobility issues and mood changes (3, 4).

Complications from diabetes, arthritis, and stroke are other common causes of chronic pain, particularly among the elderly (5). The physical impediments caused by chronic pain can lead to difficulties at work and affect an individual's ability to maintain strong social connections (4).

Alleviating Chronic Pain

Proper techniques for pain management ought to control pain and allow individuals to complete their daily activities (4). While medication is an integral component of managing chronic pain, other strategies such as exercise therapy also play a role in the long-term management of chronic conditions (3).

A large body of scientific evidence has demonstrated the benefits of long-term exercise on chronic low back pain (6, 7), chronic neck pain (8), and neuropathic pain (9, 10). Additionally, exercise improves physical function as well as mood. It also prevents cardiovascular, neurodegenerative, and bone diseases that may further exacerbate pain (1).

Exercises that stabilize the spine and strengthen the core can build strength and endurance in muscle groups that support the back. This helps manage chronic low back pain. This is particularly important since atrophy and other structural changes are often seen in these muscle groups, resulting in weaker muscles that are more prone to fatigue (11).

Digital Health Platforms for Chronic Pain Management

Digital tools can help patients progress beyond the early stages of exercise training to establish positive habits. It can also help with understanding patient perceptions of pain to inform more effective pain management therapies.

1. Using virtual coaches for exercise therapy

Maintaining high patient engagement is especially critical during the initial stages of exercise training when patients may experience a short-term exacerbation of pain (12). Without close supervision, patients are unlikely to complete programs, resulting in sedentary lifestyles that perpetuate the vicious cycle of escalating pain (1). Since direct

supervision by a health care professional for a patient's pain is not always possible, digital platforms prove very useful for remote monitoring and training.

Digital health platforms provide the necessary guidance for patients to follow exercise regimens. They can play the role of a virtual coach to increase patient engagement. Virtual coaches interact with patients, gamify the exercise schedule, and ensure that patients complete exercises correctly. Further, access to demonstration videos for exercises can help patients follow their health care provider's instructions, preventing injuries caused by poor form.

2. Using digital diaries to track pain

One of the most difficult aspects of effective pain management is the accurate baseline assessment of patients. These assessments consist of physical examinations and self-reported pain ratings (4). However, during a doctor's appointment, patients often find it difficult to remember and report how they felt over an extended period of time.

Digital diaries allow patients to log their symptoms and pinpoint the start and end dates of experiencing pain. These diaries serve as an accurate record to guide the development of a personalized treatment plan (13).

3. Using digital tools for goal setting

Digital tools can be used to set timelines to fulfil specific goals in a pain management plan. These facilitate more accurate monitoring of patient progress and build rapport between patients and clinicians. Such digital tools also promote active engagement with patients by issuing real-time feedback, visualizing progress and achievements, and encouraging patients to modify their coping strategies based on how they feel on a daily basis.

Features of Digital Platforms for Pain Management

There are several key features of digital platforms that patients with chronic pain find particularly important:

- **Access to educational resources** – A survey of 20 chronic pain patients and five spouses found that individuals wanted to learn more about their condition, lifestyle adjustments such as exercise, sleep, and nutrition, and coping strategies for depressive and anxious thoughts (14). The lack of access to reliable information regarding their condition led to patient distress, particularly during the initial stages of pain. Though many turned to the Internet for answers, concerns arose over misinformation (14). Digital platforms address this challenge by curating reliable and medically relevant patient education materials in an easily accessible format.
- **On-demand support** – Patients want more contact with their health care providers. Many feel that traditional office hours present an accessibility barrier since help could be needed at any time. Patients with chronic pain are keen to leverage digital solutions that offer access to on-demand support. Moreover, the ability to log their pain, mood, sleep, and activities gives patients better insights into their own coping mechanisms (14).
- **User-friendliness** – User-friendliness is vital to any digital tool. But, ease of navigation is particularly crucial for platforms aimed at chronic pain patients since their condition can make it more challenging to engage in behavioral and cognitive activities (15).

Organizations providing clinical support & solutions must examine how they can leverage digital platforms for better patient outcomes when dealing with chronic pain. Apart from manufacturing compliant tools and devices, they should also consider leveraging integrated digital health platforms that can provide services such as digital diaries and virtual coaches to establish a closer connection with patients. This provides a unique opportunity to go beyond traditional roles by engaging with patients for better health and wellbeing.

Conclusion

Chronic pain is a debilitating condition that can lead to physiological and psychological consequences. Consistent in-patient care is not feasible for individuals with chronic pain, making remote management even more critical. To do this, patients need access to the right educational resources about their pain as well as the ability to monitor pain to develop personalized management techniques. Digital health platforms can

provide patients with daily on-demand guidance as well as quantifiable and objective health metrics. They can act as virtual coaches that assist patients with exercise therapy, as digital diaries for individuals to log their pain experience, or as tangible goal-setters for tracking patient progress. In addition, such digital tools can generate insights for clinicians to optimize their pain management strategies.



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