Case Report

Mental Health Challenges in a Worker’s Compensation Injury : A Case Report

**Abstract**

Mental health challenges are frequently experienced by injured workers within the United States Worker’s Compensation system. The mental challenges often arise later in the patient’s care journey and may not be directly related to the initial injury. Digital health offers a new option to track and provide intervention to patients such as these. Particularly, through Remote Patient Monitoring (RPM), tracking of health concerns associated with tobacco use, diabetes, and obesity has become a possibility.

This case report details an injured 55-year-old male firefighter who suffered an ACL tear with surgical recovery. In the midst of his recovery, he also developed low back pain, a common. He received digital health care through Plethy’s Recupe app in addition to his Medical and Physical Therapy care. Throughout this time, the patient also continued with outpatient Physical Therapy, with multiple 6-week sessions. Though his knee recovered, the injured worker encountered substantial pushback towards his lower back pain and found it difficult to receive treatment tailored to this problem. From onset, over 9 months passed before he received treatment, and surgery was not scheduled for nearly a year.

Possibly due to the delay and his inability to perform his strenuous profession, the patient developed some mental health challenges. His Recupe coach noticed risk factors and had the patient fill out a Patient Health Questionnaire – 8 (PHQ-8) through the Recupe app. This revealed a risk for depression, and a report was provided to the patient’s Worker’s Compensation Claims Adjuster. The Patient was quickly referred to mental health resources for further treatment.

This case was an example of how digital health can be used to screen and catch mental health challenges at an early stage. Even though his initial condition resolved, digital health used a validated patient-reported outcome measure to detect mental health risk. Also, the patient’s care journey illustrates some of the challenges that injured workers can encounter, especially when they do not experience a textbook recovery. It is important that care be provided and beneficial to all when delays can be minimized. Fortunately, digital health shows promise in providing a solution to some of these challenges.

Keywords: depression, Mental health , Plethy’s Recupe , surgical recovery ,

**Introduction**

Orthopedic conditions are frequently treated in healthcare settings, both surgically and through therapy, and this is well-published [1] [2] [3]. Conditions can occur together, such as low back pain after ACL surgery [4]. There are also recorded differences when the patient is treated within the Worker’s Compensation system in the United States versus general healthcare. One study showed that negative outcomes increased twofold compared to similar patients not in worker’s compensation [5]. Another found significantly poorer outcomes with upper extremity surgeries [6]. And similar poor recovery after lumbar disc surgery [7].

One new addition to this healthcare arena is digital health, through Remote Patient Monitoring (RPM) tracking of health concerns associated with tobacco use, diabetes, and obesity [8] [9] [10] [11] [12]. It is a sub-category of telehealth. It enables providers to detect a patient’s physiological deterioration and obtain more detailed health status information to make treatment decisions [24]. In orthopedic patients, digital health helps guide patients through their recovery, such as home exercises and red flag symptom reporting [13] [14]. This transformation is reshaping the way orthopedic care is delivered, from diagnosis and treatment to patient outcomes and beyond. The goal is to enhance the efficiency, accuracy, and accessibility of orthopedic care, ultimately improving patient outcomes and reducing healthcare costs [25]. Patients assigned home exercise plans have been shown to have poor compliance, with a study reporting 70% non-compliance [15] [16].

From mobile medical apps and software that support the clinical decisions doctors make every day to artificial intelligence and machine learning, digital technology has been driving a revolution in health care [26]. Fortunately, studies using digital health to augment rehabilitation have been promising. One such digital health platform is Recupe from Plethy, where a wearable sensor accurately assesses movement with exercises [17]. Patients report good engagement; one study demonstrated engagement 5 out of 7 days per week [18]. Specifically, in Worker’s Compensation, a study with over 1000 subjects showed good engagement and pain decrease of 3.9/10. [19]. Overall, ROM improved faster, such that knee flexion hitting 120 degrees 25 days sooner per expected trajectory and significantly fewer manipulations under anesthesia (MUA). [20]

Contributing to this improvement are a live coach and the mood check, with poor mood correlated with poor engagement [21]. In addition, mood can be captured through Patient Reported Outcome Measures (PROs) administered through the app. One is the Patient Health Questionnaire – 8 (PHQ-8), which has been shown to be an accurate measure of depression risk [22] [23].

This Case Study details an injured worker treated in the United States Workers Compensation system, who experienced recovery from an initial surgery, reported a secondary low back complaint, and reported a risk for mental health concerns, along with the possible causes, and the outcome from a mental health alert.

**Case Study**

Patient A was a 55-year-old male Hispanic FireFighter who was prescribed Recupe for Home Exercises in 2023. This was from Worker’s Compensation, in conjunction with Medical and Physical Therapy treatments.

He had been diagnosed with a left knee ACL sprain from a work injury. He previously had an ACL repair in 2007 on the same L knee.

After a month and a half of pre-surgical exercises, with good adherence over 5 times per week, he had surgery on his L knee. He then stopped exercising for about a month. Then he began engaging in exercises about 3 times per week.

Throughout this time, Patient A also continued with outpatient Physical Therapy, with multiple 6-week sessions. His mood was consistently neutral during this time, and he stopped reporting after February 2024. His knee range of motion and his pain consistently improved during this time.

**Figure 1: Knee Flexion – Active Range of Motion**

A graph with orange dots

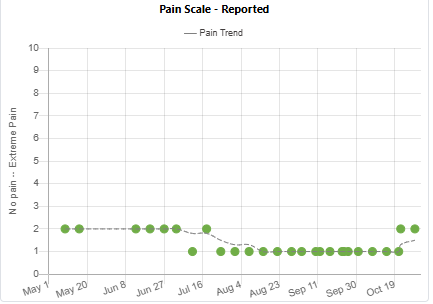
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Knee Flexion increased from 50 to 100 degrees.

Four months into his post-operative care, he reported low back pain. His physical therapy treatments provided care for this, and he had acupuncture as well. However, this continued for another 8 months, including a severe exacerbation in June 2024, necessitating an emergency room visit. He reported frustration with the whole worker’s compensation process, where he requested a and was denied back surgical referral, and required a Qualified Medical Examiner (QME) to review his case to move forward.

From June to October, his engagement became less regular, averaging once or twice a week. Unfortunately, rather than report the pain exacerbations, the injured worker would simply disengage. Thus, his pain scores remained low. Fortunately, the Recupe coach discovered this upon conversations with him

**Figure 2: Pain reported 6 months after ACL surgery**



The QME visit occurred in late October. When communicating with the Recupe coach, Patient A shared his frustrations with the bureaucratic nature of the claim process as well as the toll it was taking on his mental health. During this time, he could not work and possibly would have to retire early if his health did not recover due to the physical nature of his job.

In December 2024, Patient A was scheduled for further testing, including an MRI and Nerve Conduction Velocity test. With the findings of these tests, he was referred for additional physical therapy, but this was denied by his insurance company. In February 2025, other than Recupe, he reported that he was receiving no other treatment except pills. He expressed concern over this due to long-term health effects.

At this time, his Recupe coach suggested that he fill out the PHQ-8 depression survey. His score was 8/24, considered mild depression. A score of 10 or more indicates clinically significant depression.

Though his score was less than this, when combined with his statements, a report was provided to his Worker’s Compensation Claims adjuster. The Adjuster appreciated the notification, and Employee Assistance Program (EAP) mental health services were immediately provided.

After this, Patient A decided to pause his Recupe exercises for three months until his surgery, scheduled for May 2025.

**Discussion**

This is a good example of the mental health challenges that a patient in the worker’s compensation system can experience with atypical recovery. The initial injury, an ACL sprain, was surgically treated within several months. However, his back pain required a QME evaluation and denials of care before finally having surgery scheduled almost a year after his emergency room visit. During this process, the time spent suffering, idly waiting for treatments to be approved, and the loss of work appear to be significant mental health challenges.

Digital health can help by monitoring mental health and by providing objective data. The Recupe coach was important in this case, as the patient has ceased to answer the mental health check, which is asked daily. The coach provided an intervention, which was to manually assign the PHQ-8 survey, and to encourage the patient to complete it. Once the data was collected, a report with this and other mental health history information was provided to the claims adjuster, and mental healthcare was provided.

Ideally, some of the other recovery information could be utilized by the insurance company to provide care earlier, as pain and other data on the patient’s lower back pain existed over a year before his scheduled surgery. It was good to see that mental health resources were provided quickly.

It is also relevant to mention that patients within his line of work, and similar public servant professions, are primarily male and generally live an active lifestyle outside of their jobs. Their physical fitness has a deep value in their ability to work but, furthermore, their own sense of self. Thus, becoming injured and remaining injured for extended periods can represent a significant internal conflict. Unfortunately, it is common for this population to be reluctant to accept certain resources and participate in programs such as Recupe. Additionally, under the assumption that these elements will not ultimately aid in their recovery, they seldom value the benefits of monitoring their pain levels and mental health. This trend can be observed in Patient A to a degree. For example, he rarely reported mood levels and, as mentioned above, these scores were consistently neutral. However, those submissions present a disparity with the level of frustration he was reporting to his Recupe coach. Similarly, his PHQ-8 assessment did not immediately reflect the symptoms he reported to his Recupe coach, despite their severity.

Therefore, injured workers within similar lines of work, such as Patient A, may display a tendency to underreport mental health symptoms, which hinders their ability to access appropriate interventions in a timely manner. It is important to note that these challenges were detected by the patient’s health coach. This illustrates the importance of a live interaction to catch patient information that may be missed otherwise.

Another pattern observed in Patient A. was that engagement in the program fluctuated throughout his participation. His periods of high engagement coincided with periods in which his treatments and interventions were moving forward, such as after his knee surgery. Conversely, his periods of diminished engagement coincided with periods in which his case was not seeing any developments. Regardless, Patient A never stopped communicating with his Recupe coach. His mood and overall demeanor when communicating also reflected this trend, with high spirits and overall positive demeanor during periods with developments in his case and low spirits during periods in which his case remained unresolved. Patient A reported the process had also put a toll on his family relationships and friendships, making him increasingly isolated and even more anxious and focused on his workers' compensation case.

**Figure 3: Home Exercise Adherence after ACL Surgery**

**A graph of a line graph

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In the future, it will be good to see how insurance companies and other healthcare payors better use the information and patterns provided by digital health. As earlier care may result in reduced overall costs, the better integration of digital health data into the care delivery process can help both the patients and the payors.

**Conclusion**

The challenges demonstrated in this case study illustrate how the worker’s compensation system can exacerbate mental health risks. It is important that care be provided and beneficial to all when delays can be minimized. Fortunately, digital health shows promise in providing a solution to some of these challenges.

Ethical Approval:

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

Consent

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

**References**

1. Artz, Neil, et al. "Effectiveness of physiotherapy exercise following total knee replacement: systematic review and meta-analysis." BMC musculoskeletal disorders 16.1 (2015): 1-21.
2. Genêt F, Schnitzler A, Lapeyre E, Roche N, Autret K, Fermanian C, Poiraudeau S. Change of impairment, disability and patient satisfaction after total knee arthroplasty in secondary care practice. InAnnales de réadaptation et de médecine physique 2008 Nov 1 (Vol. 51, No. 8, pp. 671-682). Elsevier Masson.
3. Kaye, Alan David, et al. "Enhanced recovery pathways in orthopedic surgery." *Journal of Anaesthesiology Clinical Pharmacology* 35.Suppl 1 (2019): S35-S39.
4. Nadler, Scott F., et al. "Low back pain in college athletes: a prospective study correlating lower extremity overuse or acquired ligamentous laxity with low back pain." *Spine* 23.7 (1998): 828-833.
5. De Moraes, Vinícius Ynoe, et al. "Workers’ compensation status: does it affect orthopaedic surgery outcomes? A meta-analysis." *PloS one* 7.12 (2012): e50251.
6. Gruson, Konrad I., et al. "Workers' compensation and outcomes of upper extremity surgery." *JAAOS-Journal of the American Academy of Orthopaedic Surgeons* 21.2 (2013): 67-77.
7. Anderson, Joshua T., et al. "Return to work after diskogenic fusion in workers' compensation subjects." *Orthopedics* 38.12 (2015): e1065-e1072.
8. Collins, Jamie E., et al. "Effect of obesity on pain and functional recovery following total knee arthroplasty." *JBJS* 99.21 (2017): 1812-1818.
9. Maniar, Rajesh N., et al. "WHO class of obesity influences functional recovery post-TKA." *Clinics in Orthopedic Surgery* 10.1 (2018): 26-32.
10. Boyce, Louis, et al. "The outcomes of total knee arthroplasty in morbidly obese patients: a systematic review of the literature." *Archives of orthopaedic and trauma surgery* 139 (2019): 553-560.
11. Petito, Lucia C., et al. "Remote physiologic monitoring for hypertension in primary care: a prospective pragmatic pilot study in electronic health records using propensity score matching." *Jamia Open* 6.1 (2023): ooac111.
12. Michaud, Tzeyu L., et al. "Association between weight loss and glycemic outcomes: a post hoc analysis of a remote patient monitoring program for diabetes management." *Telemedicine and e-Health* 26.5 (2020): 621-628.
13. Shim GY, Kim EH, Lee SJ, Chang CB, Lee YS, Lee JI, Hwang JH, Lim JY. Postoperative rehabilitation using a digital healthcare system in patients with total knee arthroplasty: a randomized controlled trial. Archives of Orthopaedic and Trauma Surgery. 2023 May 2:1-0.
14. Hui , T., Subramanian , S., & Kamath , A. (2023). Can We Improve Clinical Outcomes and Patient Engagement after TKA Using a Digital Health Remote Monitoring Platform? Perioperative Results with Recupe . Journal of Advances in Medicine and Medical Research, 35(16), 78–84. https://doi.org/10.9734/jammr/2023/v35i165091
15. Essery R, Geraghty AW, Kirby S, Yardley L. Predictors of adherence to home-based physical therapies: A systematic review. Disability and Rehabilitation. 2017;39(6):519-34.
16. Nicolson, Philippa JA, et al. "Self-reported home exercise adherence: a validity and reliability study using concealed accelerometers." *Journal of Orthopaedic & Sports Physical Therapy* 48.12 (2018): 943-950.
17. Ershadi G, Hughes S, Sundaram R, Sarrafzadeh M. Comprehensive Musculoskeletal Care Platform Enabling At-home Patient Care. InVISIGRAPP (2: HUCAPP) 2022 (pp. 190-196).
18. Hui, T., Greene, H., Sasaura, P., Subramanian, S., Sharew , B. A., & Woldebirhan, Y. (2023). Improved Range of Motion and Decreased Complications After Total Knee Arthroplasty with Use of Plethy Recupe Remote Patient Monitoring: A Retrospective Study. Journal of Advances in Medicine and Medical Research, 35(22), 54–61. <https://doi.org/10.9734/jammr/2023/v35i225246>
19. Hui, T., and J. Gorham. “Digital Health Augmented Orthopedic Recovery in Worker’s Compensation Patients Demonstrates Good Engagement”. *Journal of Advances in Medicine and Medical Research*, vol. 37, no. 4, Mar. 2025, pp. 197-04, doi:10.9734/jammr/2025/v37i45793.
20. Hui , Timothy, Hunter Greene, Paul Sasaura, Subu Subramanian, Bereket Ayalneh Sharew, Yordanos Woldebirhan, and Jamin Gorham. 2024. “Post-Operative Range of Motion Exercises Performed Most Days at 50% Maximum ROM With Recupe Digital Health Improved ROM Recovery and Reduced Complications”. *Journal of Advances in Medicine and Medical Research* 36 (1):145-50. <https://doi.org/10.9734/jammr/2024/v36i15358>.
21. Hui T, West A, Gorham J, Woldebirhan Y, Subramanian S. Decreased Mood Correlated with Decreased Exercise Adherence and Increased Pain. JAMMR [Internet].2023;35(14):72-6.
22. Kroenke, Kurt, et al. "The PHQ-8 as a measure of current depression in the general population." Journal of affective disorders 114.1-3 (2009): 163-173.
23. Wu, Yin, et al. "Equivalency of the diagnostic accuracy of the PHQ-8 and PHQ-9: a systematic review and individual participant data meta-analysis." *Psychological medicine* 50.8 (2020): 1368-1380.
24. Baumann S, Stone RT, Abdelall E. Introducing the Remote Patient Monitoring Usability Model to Overcome Challenges. Sensors. 2024 Jan;24(12):3977.
25. Jeyaraman M, Ram PR, Jeyaraman N, Ramasubramanian S, Shyam A. The era of digital orthopedics: A bone or bane?. Journal of Orthopaedic Case Reports. 2024 Jan;14(1):1.
26. P. S S, S P, S N. Navigating Digital Health Technology: A Comprehensive Review of USFDA Regulations. J. Adv. Med. Pharm. Sci. 2024 Sep. 26;26(10):1-11.