E-Poster

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The Hand Rehab Project: Development of a Smart Rehabilitation App With Sensor-Based Assessment for Rheumatoid Arthritis Patients

Topic: Telerehabilitation

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BACKGROUND

Rheumatoid arthritis (RA) is a progressive autoimmune disorder that commonly affects the hands, causing pain, stiffness, and impaired function. Conventional rehabilitation methods often face challenges related to accessibility and patient adherence. The Hand Rehab Project seeks to overcome these barriers by developing a user-friendly mobile application designed to facilitate structured hand exercises and provide educational guidance for RA patients. This app integrates a specialized hand glove device that enables therapists to assess wrist and finger mobility, offering precise data for personalized rehabilitation plans. By leveraging digital health solutions, the project aims to enhance self-management and improve hand function in individuals with RA.

METHODS

The app was designed following a user-centered approach, incorporating feedback from focus groups comprising RA patients, rehabilitation specialists, and software engineers. Key features include a structured exercise regimen, symptom-tracking diaries, and educational resources to support RA self-management. Additionally, the hand glove device utilizes sensor technology to measure wrist and finger mobility, generating quantitative data to assist therapists in evaluating treatment effectiveness. Usability testing was conducted over several weeks, during which participants provided insights through surveys and interviews regarding the app's functionality, usability, and impact on rehabilitation adherence.

RESULTS

Initial findings indicate high user satisfaction and improved adherence to rehabilitation exercises. Participants reported notable enhancements in hand function, reduced pain, and increased confidence in self-management. The structured exercise modules and interactive features, such as reminders and progress tracking, were well-received. Furthermore, the hand glove device proved valuable in therapist-patient communication by providing objective mobility data, facilitating tailored treatment approaches. Feedback emphasized the app's ease of use, accessibility, and motivational features, all of which contributed to sustained engagement with the program.

CONCLUSION

By integrating digital exercise programs with sensor-based assessment tools, the app offers an innovative and accessible solution for improving hand function and self-care. Future research will focus on assessing long-term effectiveness and expanding its clinical application, bridging the gap between home-based rehabilitation and professional therapy.

Statement of Disclosures

None

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