

Wearable devices can improve physical activity and reduce pain in middle-aged adult with musculoskeletal chronic pain

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Abstract

Background

Chronic musculoskeletal (MSK) pain is a leading cause of disability, with significant impacts on quality of life. National Institute for Health and Care Excellence (NICE) guidelines recommend physical activity (PA) as a core strategy in managing MSK conditions. While wearable devices have been shown to promote PA in general populations, their feasibility and effectiveness in MSK pain management within NHS outpatient settings remain underexplored.

Objectives

This study evaluates the feasibility and acceptability of a randomized controlled trial (RCT) using wearable devices to promote PA among middle aged adults with chronic MSK pain.

Methods

A mixed-method, 24-week feasibility RCT was conducted with 33 participants recruited from Royal London Hospital for Integrated Medicine/University College London Hospital (RLHIM/UCLH) and Rejoice Resource Centre. Participants were randomized in a 1:3 ratio into a control group (CG) (standard care, n=8) and an intervention group (IG) (standard care plus wearable device, n = 25) Quantitative outcome measures (pain, PA levels, mental health, and quality of life) were collected at baseline, weeks 4, 8, 12, and 24. Qualitative, semi-structured interviews were conducted at baseline, week 12, and week 24. Interview data were thematically analysed, while quantitative data were analysed using SPSS (IBM).

Results

The IG showed significant increase in PA levels (measured in Metabolic Equivalent Task minutes/week) and significant reductions in pain compared to the CG ($p < 0.05$). Quality of life and mental health also improved significantly in IG ($p < 0.05$). Participants rated the wearable devices as user-friendly, and motivating.

Significance

This study demonstrates that wearable technology is feasible and acceptable as an intervention for increasing PA in MSK patients within NHS outpatients. The findings support the potential for wearable devices to drive positive lifestyle changes and enhance pain management strategies for chronic MSK conditions

Keywords

Musculoskeletal chronic pain, Wearable devices