Clinical and cost effectiveness of a clinic-based and two digital applications of McKenzie therapy for chronic low-back pain

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Introduction

- Chronic low back pain (LBP) represents a major health problem.
- LBP is a major public health problem globally, and typically classified as being specific or nonspecific.
- In 2015, LBP was responsible for 540 million affected people and 60.1 million disability adjusted life years worldwide .
- Virtual reality involving the use of video games or non-game applications are alternatives to conventional face-to-face physical therapy for LBP.

Purpose

- This study aimed to evaluate the effectiveness and cost-effectiveness of a clinic-based McKenzie therapy (CBMT), mobile-phone based McKenzie therapy (TBMT) and virtual-reality based McKenzie therapy (VRGMT) in patients with long-term LBP.

Methods

- One hundred twenty consenting patients with long-term LBP were randomised into CBMT; n = 43; TBMT; n = 36; VRGMT; n = 41 and completed the study.
- Participants were consecutively recruited from the Physiotherapy Department of Obafemi Awolowo University (OAU) Teaching Hospitals Complex.
- The intervention consisted of CBMT, TBMT and VRGMT. Treatment was applied thrice weekly for eight weeks.
- The outcomes were assessed in terms of Pain Intensity (PI), Back Extension Muscles' Endurance (BEME), Activity Limitation (AL), Participation Restriction (PR), Fear Avoidance Belief (FAB), Kinesiophobi (Kp), and General Health Status (GHS) and resource use questionnaire.
- Data were analysed using descriptive statistics of mean and standard deviation, and inferential statistics of repeated measure ANOVA, Friedman's ANOVA, Kruskal-Wallis and post-hoc test.
- Alpha level was set at $p < 0.05$. Economic evaluation estimates were the incremental cost-effectiveness ratios.

Results

- The mean of age of the participants was 42.9 ± 12.1years.
- There was a significant difference ($p < 0.05$) within group comparison across baseline, 4th and 8th week for all the variables.
- Across group analysis showed there were significant differences in the mean change ODI (CBMT = 73.77; TBMT = 68.53; BEVRG = 36.26), FABQ-P (CBMT = 81.01; TBMT = 51.36; BE-VRG = 43.50), FABQ-W (CBMT = 80.16; TBMT = 44.77; BE-VRG = 50.18), TSK (CBMT = 68.92; TBMT = 49.49; BE-VRG = 59.88), and all the domains of GHS except for MH (all $p < 0.05$).
- Similarly, there were no significant differences in the mean change across the groups at the end of the eight weeks of the study except for ODI (CBMT = 64.15; TBMT = 60.79; BE-VRG = 45.39), FAB-P (CBMT = 72.31; TBMT = 57.37; BE-VRG = 40.41) and all domains of GHS except for RLM which recorded no significant difference (all $p > 0.05$).
- Compared to CBMT, BEVRG is potentially cost-effective as it offers the lowest cost and highest health benefits.

Conclusions

- The findings of the study indicate that CBMT and its digital variants are effective at reducing pain and disability and improving psychosocial outcomes and GHS in patients with long-term LBP.
- This finding is important to policy makers seeking cost-effective interventions that can be delivered within budget to improve the health outcomes of people with long-term LBP.

Reference

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