

Cost-effectiveness of Virtual Reality Game Versus Clinic based McKenzie Extension Therapy for Chronic Non-specific Low-back Pain

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Background: Low-back pain (LBP) is a major public health problem globally and its direct and indirect healthcare costs are growing rapidly. Therefore, it is necessary to provide treatments that are cost-effective. Virtual reality involving the use of video games or non-game applications are alternatives to conventional face-to-face physical therapy for patients with LBP. The aim of this study was to assess the cost-effectiveness of Virtual Reality Game (VRG) compared to Clinic-based McKenzie therapy (CBMT) for chronic non-specific LBP.

Methods: Patients with chronic non-specific LBP were randomised into either VRG (game version of the traditional McKenzie programme) or CBMT group. Patients' level of disability was assessed using Oswestry Disability Index (ODI) at week 4 and week 8. ODI was mapped to SF-6D to generate quality adjusted life years (QALYs) used for cost-effectiveness analysis. Resource use and costs were assessed based on rehabilitation services in Nigeria in 2018 from a healthcare perspective. Cost-effectiveness analysis which including the direct healthcare costs was conducted. Incremental cost per QALY was also calculated.

Result: Forty six patients (VRG, n = 22; CBMT, n = 24) with the mean ($\pm$ SD) age of $32.6 \pm (11.5)$ years for VRG and $48.8 \pm (10.2)$ years for CBMT intervention completed in this study. The mean direct health costs per patient were USD106.0 and USD133.59 for VRG and CBMT, respectively. The mean quality adjusted life years at week 4 and week 8 were (VRG, $0.0574 \pm (0.002)$; CBMT, $0.0548 \pm (0.002)$); and (VRG; $0.116 \pm (0.002)$; CBMT; $0.114 \pm (0.004)$), respectively. ICER showed that VRG arm was less costly and more effective than CBMT.

Conclusion: The findings of this study suggest that VRG was cost saving for chronic non-specific LBP compared to CBMT. This evidence could guide policy makers, payers, and clinicians in evaluating VRG as a treatment option for people with chronic non-specific LBP.