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Cost-effectiveness of using a motion-sensor biofeedback treatment approach for the management of sub-acute or chronic low back pain: economic evaluation alongside a randomised trial

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Abstract

BACKGROUND: Low back pain is a common and costly condition internationally. There is high need to identify effective and economically efficient means for managing this problem. This study aimed to explore the cost-effectiveness of a novel motion-sensor biofeedback treatment approach in addition to guidelines-based care compared to guidelines-based care alone, from a societal perspective over a 12 month time horizon.

METHOD: This was an incremental cost-effectiveness analysis conducted concurrently with a pilot, cluster randomized controlled trial. Health care resource use was collected using daily diaries and patient-self report at 3, 6 and 12 month follow-up assessments. Productivity was measured using industry classifications and participant self-reporting of ability to do their normal work with their present pain. Clinical effect was measured using the Patient Global Impression of Change measured at the 12 month follow-up assessment. Data were compared between groups using linear regression clustered by recruitment site. Bootstrap resampling was used to generate a visual representation of the 95% confidence interval for the incremental cost-effectiveness estimate. Two, one-way sensitivity analyses were undertaken to examine the robustness of findings to key assumptions.

RESULT: There were n = 38 participants in the intervention group who completed the 12 month assessment and n = 45 in the control. The intervention group had greater use of trial-related medical and therapy resources [$477 per participant (95% CI: $447, $508)], but lower use of non-trial medical and therapy resources [$-53 per participant (95% CI: $-105, $-0)], and a greater improvement in productivity [$-5123 per participant (95% CI: $-10,174, $-72)]. Overall, the intervention dominated with a saving of $478,100 and an additional 41 participants self-rating as being very or much improved compared to the control. There was >99% confidence in this finding of dominance in both the primary and sensitivity analyses.

CONCLUSIONS: The motion-sensor biofeedback treatment approach in addition to guidelines- based care appears to be both more clinically effective and economically efficient than guidelines- based care alone. This approach appears to be a viable means to manage low back pain and further research in this area should be a priority.

TRIAL REGISTRATION: The randomised trial this research was based upon was prospectively registered on March 25th 2009 with the Australian New Zealand Clinical Trials Registry: ACTRN12609000157279 .

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