

Does a physiotherapy-led cognitive-behavioural chronic low back pain programme alter patients' health locus of control? A pragmatic cohort study

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Background: Belief is a powerful driving force in one's behaviour. Health locus of control (HLOC) refers to a person's belief of where responsibilities for his/her health condition lies. Evidence suggests that HLOC is associated with health attitudes, health behaviours and the key clinical elements of non-specific chronic low back pain (NSCLBP). These are the key areas physiotherapists seek to address in their practice. However, it is not known whether a physiotherapy-led cognitive-behavioural chronic low back pain (CBCLBP) programme effects patient HLOC.

Purpose: To determine: (1) the effects of a six-week CBCLBP programme on patient HLOC, pain intensity, disability, fear-avoidance belief (FAB) and self-care attitude; (2) the association between changes in pain intensity, disability, FAB and changes in HLOC; and (3) the costs of producing any effect and healthcare utilization.

Methods: In an A-B-A same-subject design, patients with NSCLBP and high FAB (TSK score>37) were recruited. Patients completed a four-week course of 1:1 physiotherapy followed by a six-week CBCLBP programme. Outcomes were measured before and after the 1:1 physiotherapy, immediately after the CBCLBP programme, and 3- and 6-months later. Friedman's ANOVA and Wilcoxon signed-rank tests determined changes between phases. Multiple regression determined the relationship between HLOC and outcome of interest. Significance was set at 0.05.

Results: N=70 patients were recruited. N=55 patients entered the programme and completed the 6-month follow-up (79%). No significant improvement was seen after the 1:1 physiotherapy intervention. Significant improvement in HLOC ($p<0.001$), pain intensity ($p<0.001$), disability ($p<0.001$), FAB ($p<0.001$) and self-care attitude ($p<0.001$) was found immediately after the CBCLBP programme, with improvements sustained for 6 months. Changes in HLOC explained 6%, 0.5% and 31.9% variances in

changes in pain, disability and FAB respectively, after controlling other variables. Increased internal locus of control (ILOC) was a significant predictor of reduction in FAB ($p=0.002$). HLOC had no predictive importance in the reduction of pain intensity or disability. The mean cost of the programme to the provider was £285.82 per patient. At 6-month, 25% of the participants re-visited their GP, and 16% consulted other therapy.

Conclusion: The CBCLBP programme significantly improved patients' HLOC, pain intensity, disability, FAB and attitude to self-care. Increase in ILOC was a unique significant predictor of reduction in FAB, highlighting the potential importance of improving ILOC in attaining better FAB outcome, which in turn is related to reduction in pain intensity and disability. As a guide to managers and budget allocators, £285.82 per patient is a relatively low healthcare cost compared to 1:1 physiotherapy intervention.

Implications: HLOC should be targeted during CBCLBP programme to optimize treatment outcomes in NSCLBP. For this subgroup of NSCLBP patients, the CBCLBP programme was more effective in addressing the multi-dimensional nature of NSCLBP than 1:1 treatment. It is recommended that policy makers and clinicians should routinely consider the CBCLBP programme as a first-line intervention rather than a last resort for this subgroup of patients.

Key-words: 1. Health locus of control. 2. Non-specific chronic low back pain. 3. Cognitive-behavioural exercise programme.

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ETHICS APPROVAL: Approved by Bristol Research Ethics Committee (12/SW/0197), United Kingdom