Patients with longstanding back pain improve on cognitive behavioral variables after a short, intensive pain management program

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BACKGROUND and AIMS

International guidelines indicate that patients with Chronic Low Back Pain (CLBP) benefit from cognitive behavioral interventions. Recently, a 1 year prospective study showed a positive change in outcomes of functionality and pain in patients with CLBP after a short, intensive cognitive behavioral pain management program, as provided by RealHealth_NL[1]. However, as yet it is unclear if these changes are related to changes in cognitive behavioral factors as assumed in the Fear Avoidence Model (FAM)[2].

Aims of this study: (1) to evaluate changes over time in cognitive behavioral variables in patients with CLBP after the RealHealth_NL program and (2) to explore whether relationships exists between changes in cognitive behavioral variables and functionality related outcome measures.

METHODS Patients

- 457 patients with CLBP referred to the spinal surgeons participated.
- Main inclusion criteria: CLBP ≥ 6 months, no indication for surgical or other invasive pain intervention, age 18-65 yrs.

Outcome measures	Baseline	After 2-wk program	1 month follow-up	1 year follow-up	Baseline vs 2-wk $F_{(1,456)}$ (R^2)
Cognitive behavioural					
PCS	22.7 (8.7)	14.3 (6.9)	12.2 (6.6)	11.9 (7.4)	495.3* (0.52)
TSK	39.4 (6.4)	32.4 (6.9)	31.5 (6.6)	31.6 (7.3)	491.2* (0.52)
PSEQ	32.7 (10.6)	43.8 (9.7)	42.8 (11.2)	43.7 (11.8)	582.3* (0.56)
ZSDS	26.1 (9.1)	20.6 (8.5)	20.0 (9.4)	20.0 (10.6)	210.9* (0.32)
Functionality related					
ODI	40.7 (13.8)	34.0 (14.2)	31.0 (14.7)	27.1 (16.9)	137.6* (0.23)
NRS 'severity'	59.6 (21.4)	38.4 (21.6)	37.0 (23.9)	36.4 (25.6)	363.4* (0.44)

* $p < 0.001$

Table 1: Mean (SD) and time effects (R^2) for cognitive behavioral and functionality related outcome measures.

METHODS Intervention Design and Outcomes

- RealHealth_NL program: a 2-week residential training consisting of 100 hrs of cognitive behavioral training, including physical activities and education (Fig1 & 2)..
- As a part of a consecutive cohort study patients completed self reported questionnaires at baseline, after 2-week program, 1 month, and at 1 year follow-up.
- Outcome measures. Cognitive behavioral: catastrophizing of pain (PCS), fear of movement/(re)injury (TSK), pain self-efficacy (PSEQ), and distress (ZSDS). Functionality related: disability in functioning (ODI) and pain 'severity' (NRS).
- Analyses: Time effects (R^2) were determined by Repeated Measurement MANOVA. Change scores (Δ) between baseline and 1 year follow-up on cognitive behavioral variables were correlated with change scores in outcome measures.

Fig.1: Education by spine surgeon.

Fig.2: Training session.

RESULTS Demographics

- Complete datasets were available of 457 patients.
- Mean age 46 yrs (SD 9.5 yrs); ♀ 59% (n=270); mean duration of CLBP 12 yrs (SD 10.8 yrs); 31% had previous surgery.
- Mean baseline score on Roland and Morris Disability Questionnaire was 13 points (SD 4.6).

Outcome measures	*Functionality related* Δ ODI	Δ NRS
Cognitive behavioral		
Δ PCS - Pain Catastrophizing Scale	0.43	0.36
Δ TSK - Tampa Scale for Kinesiophobia	0.34	0.19
Δ PSEQ - Pain Self Efficacy Questionnaire	0.54	0.40
Δ ZSDS - Zung Self-rating Depression Scale	0.30	0.27
Functionality related		
Δ NRS 'severity' - Numeric Rating Scale	0.47	1.00

All outcome measures: $p < 0.001$

Table 2: Pearson correlations for changes between baseline and 1 year follow-up in cognitive behavioral and functionality related outcomes.

RESULTS Outcomes

- At baseline patients reported low levels of self-efficacy, and high levels of catastrophizing, fear of movement /(re)injury, and distress.
- Mean scores on all cognitive behavioral variables changed in the desired direction immediately after the 2-week program and improvement was maintained over time (Table 1).
- Moderate but statically significant correlations exist between changes over time in cognitive behavioral variables and functionality related outcomes.

CONCLUSION

Patients with longstanding CLBP who participated in an intensive program, as provided by RealHealth_NL, improved in dysfuncional cognitve behavioral variables and functionality outcome measures. The results of this study give a preliminary indication that the cognitive behavioral approach contributes in the treatment of patients with CLBP.

Further research is needed to explore whether the suggested sequential relationships in the FAM are predictive for the functional outcome in patients with CLBP who participate in programs as RealHealth_NL.

References:
[1] Van Hooff et al., Eur Spine J 2010, 19:1517-1526; [2] Vlaeyen et al., Pain 1995; 62:363-72.