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Depression shapes treatment expectations in patients undergoing interdisciplinary multimodal pain therapy

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INTRODUCTION

The crucial role of patients' treatment expectations in influencing treatment outcomes is increasingly recognized. Nevertheless, the role of treatment expectations in treatment outcomes of interdisciplinary multimodal pain therapy (IMPT) for chronic low back pain (CLBP) remains incompletely understood. Evidence suggests that higher positive treatment expectations entail better outcomes regarding pain intensity and disability in CLBP.[1,2,3] However, research considering treatment expectations in dependence of other psychological variables, especially of depression as a common comorbidity, is lacking. We present results of the first prospective study considering expectations in concert with depression in a sample of 200 patients with CLBP undergoing an inpatient IMPT.

MATERIAL AND METHODS

200 patients with CLBP (mean age 60.23 ± 12.99, 68.5% female) undergoing an inpatient IMPT filled in a battery of questionnaires (a.o., Graded Chronic Pain Scale[4], Treatment Expectation Questionnaire (TEX-Q)[5], Becks' Depression Inventory Fast Screen[6]) at three measuring points. Based on TEX-Q total scores, 3 subgroups were generated by a cluster analysis (high, moderate, low expectations). To explore the influence of treatment expectations on pain and disability, we conducted mixed analyses of (co-) variance with repeated measures. The predictive value of treatment expectations for changes within pain outcomes was investigated by multiple regression analyses. Mediation analyses were performed with depression as independent variable, pain intensity and disability at T2 as dependent variables, respectively, and treatment expectations as mediator.

RESULTS

Regarding pain intensity there was a significant "group x time" interaction (p = 0.026, η^2 = 0.04; see Fig. 1A). Patients with higher treatment expectations at the beginning of the IMPT revealed significantly less pain after the therapy (p < 0.001) compared to patients with low expectations (T1 p = 0.003; T2 p = 0.007). For disability (see Fig 1B), results revealed a significant "group × time" interaction (p = 0.04, partial η^2 = 0.04). Post hoc tests demonstrated higher disability scores at T2 in the low expectations group when compared with the high expectations group. Regarding depression (see Fig 1C) results revealed significant main effects of time and higher depression scores in the low expectations group (p = 0.012).

Multiple regression analyses showed that reductions in pain intensity were significantly predicted by depression and treatment expectations. Treatment expectations, depression, and pain intensity were significant predictors for less disability (see Tab. 1).

Mediation analyses showed that the relationship between depression and pain intensity or disability, respectively, was partially mediated by treatment expectations (see Fig. 2A+B).

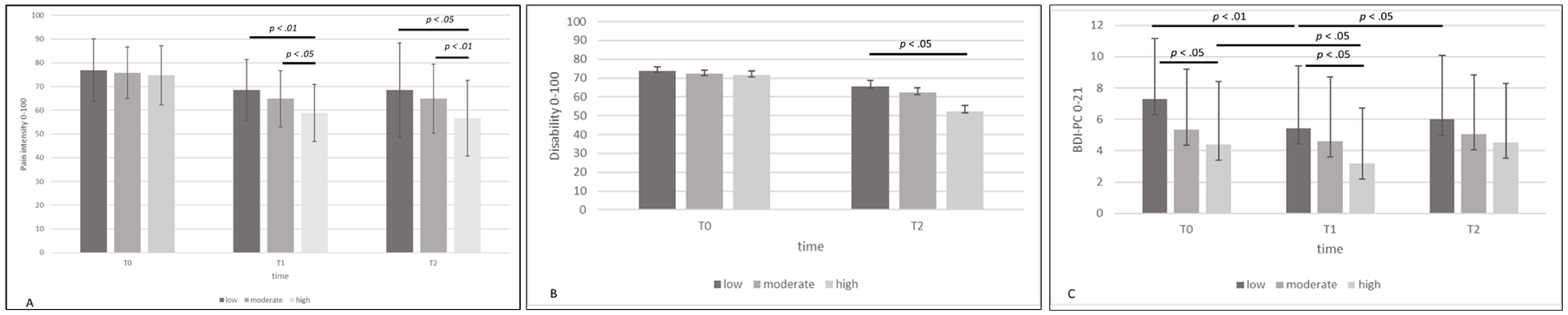

Figure 1. Pain intensity (A), disability (B), and depression (C) before treatment (T0), at the end of treatment (T1) and at the 3-month follow-up (T2) in three treatment expectations subgroups with low, moderate or high treatment expectations, respectively. Note that scores for disability are adjusted for pain intensity and depression at T0. p-values refer to Bonferroni-corrected post-hoc tests. BDI-FS = Beck Depression Inventory Fast Screen.

Dependent variable	Predictor variable	B	*robust standard error*	t	*p*	adj. R^2	f^2	AIC
Pain intensity T2	depression	1.344	0.303	4.433	< 0.001	0.124	0.149	757.77
	treatment expectations	-3.332	1.295	-2.573	0.011	0.162	0.212	752.62
	constant	78.771		8.452				
			β					
Disability T2	pain intensity T0	0.677	0.372	4.654	< 0.001	0.132	0.160	830.93
	depression	1.967	0.352	4.611	< 0.001	0.245	0.344	812.75
	treatment expectations	-4.610	-0.227	-3.068	0.003	0.290	0.439	805.39
	constant	42.225		2.881				

Table 1. Results of multiple linear regression analyses with pain intensity and disability as dependent variables, treatment expectation as predictor, adjusted for depression (both models) and for pain intensity (model for disability). Table provides regression coefficient (B), robust standard error or standardized coefficients (β), t-score, exact p-value (p), adjusted multiple determined coefficient (R^2), Cohen's effect size (f^2), and Akaike Information Criterion (AIC).

CONCLUSIONS

Treatment expectations within the psychosocial treatment context demonstrably shape the experience of pain and contribute to interindividual differences in treatment outcomes. The present analysis is the first to identify treatment expectations as a significant predictor of improvements in disability in consideration of depressive symptoms in a routine inpatient IMPT clinic setting. Results suggest that treatment expectations in patients suffering from CLBP play an important role as significant predictors of treatment outcomes. High positive expectations were associated with better pain outcomes. Comorbid depressive symptoms emerged as a significant predictor, which explained more variability in outcomes than treatment expectations and thus play a major role in the treatment of pain patients. Results are the basis and have the potential for optimizing treatment expectations regarding personalized therapy.

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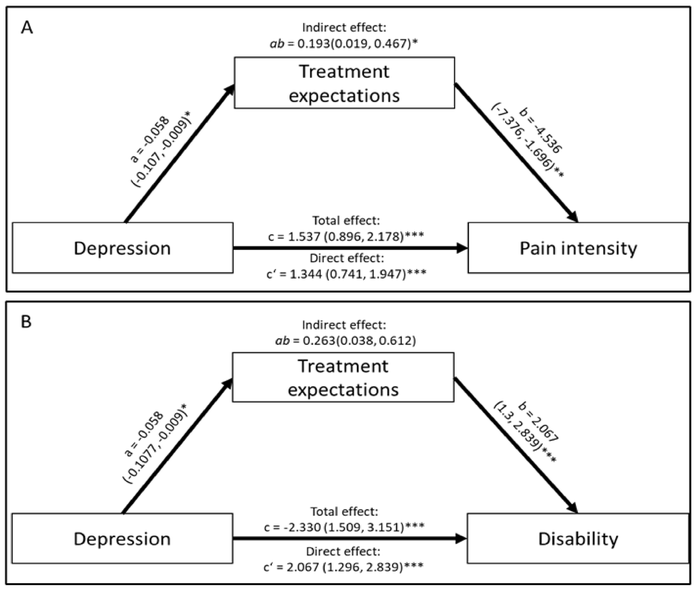

Figure 2. Total effect of depression at T0 on pain intensity (A) and disability (B), both assessed at T2, and indirect effect mediated by treatment expectations. Unstandardized coefficients with 95% Confidence Intervals (CIs) are shown. *p < 0.05; **p < 0.01; ***p < 0.001.

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