Motivation for psychological treatment predicts favorable outcomes in multimodal interdisciplinary treatment for chronic somatoform pain

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Chronic somatoform pain is a frequently occurring disorder that can induce extensive distress, impairment, and disability [1]. Multimodal interdisciplinary treatment represents the treatment of choice [2]; it typically combines psychotherapy, physical therapy and medical interventions [3]. In other words, psychotherapy is a central component within a multimodal interdisciplinary treatment setting [3] and it is also considered to be effective for the treatment of chronic pain [4]. Motivation for psychotherapy has been defined as a construct encompassing components of negative illness consequences, psychosocial lay etiology, positive psychotherapeutic treatment expectations and a general openness to psychotherapy [5]. According to the IMMPACT recommendations, core effectiveness outcomes of chronic pain treatment include pain intensity, global rating of improvement, physical functioning and emotional functioning [6]. Means to fulfill some of these requirements are numerical rating scales (NRS) to measure pain intensity and depressive symptom scales to assess emotional functioning [7]. Whereas the importance of psychotherapy motivation for treatment outcomes has been shown for domains such as somatization syndrome [8], to our knowledge, as yet, no studies have tested prognostic effects of psychotherapy motivation on outcomes of multimodal interdisciplinary treatment for chronic somatoform pain.

The novelty and aim of this study were to investigate the predictive value of initial psychotherapy motivation on outcomes of multimodal interdisciplinary treatment of chronic somatoform pain. We specifically hypothesized that higher levels of psychotherapy motivation assessed before treatment would be associated with greater reductions in pain intensity (primary outcome) and psychological distress, including depressive symptoms (secondary outcomes), all independent of age, gender, illness duration and initial levels of outcome measures.

Between 2011 and 2014, we collected data from 403 consecutive inpatients with chronic somatoform pain at the beginning and at the end of a multimodal interdisciplinary treatment program at a tertiary psychosomatic university clinic in Switzerland. The inpatient treatment program included medical interventions, pharmacotherapy, psychotherapy, relaxation, and physical therapy. All participants provided informed consent for the use of their anonymized health data for research purposes. The study was conducted in accordance with applicable Swiss research legislation. All patients completed a set of standardized self-report assessment tools, which were the Questionnaire for the Measurement of Psychotherapy Motivation [5], an 11-point numeric rating scale for the mean pain intensity over the last week (NRS, range 0-10), the Beck Depression Inventory [7], and the Brief Symptom Inventory to assess general psychological distress [9]. In the current study, Cronbach's alpha yielded acceptable to excellent internal consistency for the applied scales. Missing data were replaced using multiple imputation. Socio-demographic data were complete.

On average, patients were 48.9 years old (SD = 13.2; range 18–89) and 54.1% (n = 218) were women. The average duration of inpatient treatment was 28.8 days (SD = 7.7, range 10–71). Whereas psychotherapy motivation at pretreatment correlated significantly with symptoms of depression ($r = 0.36$, $p < 0.001$) and global psychological distress ($r = 0.40$, $p < 0.001$), it did not with mean pain intensity ($r = -0.04$, n.s.).

The primary outcome, mean pain intensity (NRS), decreased significantly from pre- to post-treatment (6.6±1.9 vs. 5.6±2.1; $p < 0.001$; Cohen's $d = 0.51$). The secondary outcome, mean level of depressive symptoms (BDI), decreased significantly from pre- to post-treatment (19.3±10.1 vs. 15.0±10.0; $p < 0.001$; Cohen's $d = 0.58$). These symptom reductions roughly correspond to clinically important improvement (see IMMPACT benchmarks, [6]) of a medium effect size. In addition, global psychological distress (BSI) decreased significantly from pre- to post-treatment (1.0±0.6 vs. 0.8±0.6; $p < 0.001$; Cohen's $d = 0.45$).

To test the prediction of treatment outcome by initial psychotherapy motivation, we used separate hierarchical regression analyses for all outcome variables (Table 1). For all analyses,

age, gender, illness duration and initial levels of outcome variables were entered as control variables in one block. Psychotherapy motivation was entered in the second and final block, and uniquely accounted for 2% of the variance in mean pain intensity, 1% in symptoms of depression and 2% in global psychological distress at posttreatment, above and beyond effects of the control variables. In the final model, greater pretreatment psychotherapy motivation was predictive of lower levels of posttreatment pain intensity ($\beta = -0.14$, $t = -2.79$, $p < 0.01$), depressive symptoms ($\beta = -0.12$, $t = -2.37$, $p < 0.05$), and global psychological distress ($\beta = -0.14$, $t = -2.78$, $p < 0.01$).

In sum, our study showed statistically significant reductions in relevant primary (pain intensity) and secondary (emotional functioning) outcomes following inpatient multimodal interdisciplinary pain treatment. Notably, patients high in initial psychotherapy motivation showed greater treatment benefits compared with less motivated patients.

Psychotherapy motivation appears to be an important predictor of posttreatment pain intensity and emotional wellbeing in multimodal interdisciplinary treatment of chronic somatoform pain in hospitalized patients. The findings from our study may inform interventions targeting the improvement of patients' motivation for psychotherapy to test their potential for enhancing the effectiveness of multimodal pain treatment. Potential targets of such interventions are "psychological-mindedness" regarding illness perception, positive treatment expectations and openness for psychological interventions. Initial treatment motivation may also serve as a useful criterion for determining differential treatment selection within an individually tailored treatment program.

The present study has important limitations. The potential for socially desirable response tendencies of chronic pain patients when completing self-report measurements should be taken into consideration. Since the multimodal treatment program is provided by a number of therapists from different disciplines, the assessment of therapist effects did not seem feasible in this setting. Future research could, for example, employ daily assessments to test more immediate therapist effects that may contribute to the overall outcome. The lack of long-term follow-up data limits interpretation as to whether the observed associations persist beyond hospitalization. Thus, future studies could benefit from longitudinal designs to test for sustainable effects of psychotherapy motivation on treatment outcomes.

Our study implicates that clinicians may want to pay special attention to chronic somatoform pain patients' motivation for psychotherapy. Whether interventions targeting psychotherapy motivation may indeed improve treatment outcome in these patients awaits further studies.

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