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

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

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

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

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

77 The primary outcome, mean pain intensity (NRS), decreased significantly from pre- to post-
78 treatment (6.6 ± 1.9 vs. 5.6 ± 2.1 ; $p < 0.001$; Cohen's $d = 0.51$). The secondary outcome, mean
79 level of depressive symptoms (BDI), decreased significantly from pre- to post-treatment
80 (19.3 ± 10.1 vs. 15.0 ± 10.0 ; $p < 0.001$; Cohen's $d = 0.58$). These symptom reductions roughly
81 correspond to clinically important improvement (see IMMFACT benchmarks, [6]) of a medium
82 effect size. In addition, global psychological distress (BSI) decreased significantly from pre- to
83 post-treatment (1.0 ± 0.6 vs. 0.8 ± 0.6 ; $p < 0.001$; Cohen's $d = 0.45$).

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

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

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

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

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

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

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