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Overlap and Differences Between Patient and Provider Expectations for Treatment Outcomes: The Case of Acupuncture

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Abstract: Our study aimed to identify patient–provider clusters with different patterns of expectations for treatment outcomes. All patients (n = 885) received acupuncture treatment from physicians for their migraine, headache, osteoarthritis, or chronic low back pain. We identified 6 robust patient–provider expectation clusters (PPECs; interclassification reliability >.89) showing differences between patients and providers in their expected treatment responses (eg, unrealistic optimists, optimistic doubters). For example, the optimistic doubters had high expectations for their treatment outcomes but were skeptical of the benefits of acupuncture in general. The providers expected good improvements for these patients. These 6 PPECs differed in their clinical characteristics and in the associated treatment responses. For example, unrealistic optimists showed the weakest treatment benefits after 6 months; other PPECs and clinical patterns are also presented in the report. Our study suggests that comparing the expectations of patients and providers is a valuable approach to identify groups of patients with greater responsiveness and those with limited treatment benefits.

Perspective:* *Patients and providers of acupuncture might vary in their expectation of the treatment effect and in clinical practice the overlap of expectations of patients and providers should be considered as important in initial consultations.

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Key words: *Expectation, prospective study, pain, acupuncture, cluster analysis.*

In patient-level data meta-analyses acupuncture was superior to sham and no acupuncture control for the chronic pain conditions, back and neck pain, osteoarthritis, chronic headache, and shoulder pain.[49] The differences between acupuncture and sham acupuncture are relatively modest, suggesting that nonspecific factors contribute to the therapeutic effects of acupuncture.[49] Current guidelines include acupuncture as one of a number of treatment options for persistent nonspecific low back pain[36] and as a prophylactic treatment for tension headache and migraine with or without aura.[37] Effects on pain reduction have been proven after the treatment and were also present at later follow-up assessments, and the effect can be regarded as similar to treatment with medication.[8]

Expectation is a well known term but a clear definition and clear distinction from associated terms is important for a precise understanding of the assessment and the clinical implications.[5,17] The term "patient expectation" can be defined as a treatment-related outcome expectation.[30] General expectations about the more general effects of a treatment should be conceptually differentiated from specific expectations about a specific effect of a treatment for a specific medical condition. Even the very general concept, optimism, has been found to be a significant predictor of health outcomes.[42] However, optimism must be considered as stable over time like a personality trait and not directly related to health care interventions.[43] Patient expectations are also related to concepts such as hope, self-efficacy, and across different medical conditions.[34] However, these concepts have different meanings compared with patient expectations: Hope must be considered as a gut feeling for expectations, self-efficacy is a more general trait representing the individual capability to deal with

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challenges, and helping alliance is the expectation that a health care provider might be of help.[19] These dimensions also deserve attention for their predictive effect on treatment outcomes, but they differ from pretreatment expectations.[48] Unfortunately, so far the content of expectation scales varies substantially between studies.[41]

In some prospective studies, patients' positive expectations have been shown to decrease pain after medical treatment[2,3,20] but so far these findings are not robust because also null findings are present.[41] A recent systematic review about the expectation outcome association summarizes the available studies very well and emphasizes that differences in the assessment and differences in the patient population might be responsible for heterogeneous results.[41] Patient expectations were reported to affect the acupuncture treatment effect.[22] A pooled analysis of previous acupuncture trials, including more than 800 patients with chronic pain, showed that patients' expectations predicted acupuncture treatment response even after adjusting for baseline characteristics.[29] In a recent double-blinded trial with patients with chronic pain and using nonpenetrating sham needles, expectations before treatment played a central role in the subsequent effectiveness of the treatment.[47] However, there are also some studies reporting no effect of patient expectations on treatment outcomes. In a study of Sherman and colleagues[44] no indicator of pretreatment expectations had an association with pain outcomes after acupuncture. Similarly, in a study on patients with osteoarthritis no effect of patients' or providers' expectations on outcomes were reported.[14]

Preferences for and expected benefits of specific treatments from the perspective of treatment providers can also affect treatment outcomes.[1] Research on providers' expectations is sparse compared with the literature on patient expectations but some pathways already have been explored. On one pathway differences in providers' delivery of the intervention and competence might affect treatment effects: Providers with higher expectations might be better trained for a specific intervention strategy and might therefore cause better treatment effects, which is a reasonable assumption because treatment effects were reported also to be affected by therapists.[50] Therefore, multilevel models are needed to control for such interindividual provider effects. A second pathway might link providers' communication about expectations to patients' expectations.[24] It has been shown in diverse contexts that a provider can change in patients' expectations initially and during the treatment.[25,26,31,40,45] A third pathway might work via nonspecific treatment ingredients in providers' communication. Providers with high expectations might be more enthusiastic and empathic. This hypothesis sounds reasonable because a better working alliance is associated with larger treatment effects in nonpharmacological interventions.[10,13] However, less is known about the effect of communication on treatment effects for pain disorders.[33]

An underlying assumption of all of these findings related to the expectation–outcome association is a rather linear relationship between expectations and treatment outcomes. Moreover, it seems plausible that there is a colinearity between patients' and providers' expectations, which can be reflected in similar effects on treatment outcomes within a group of cases. These expectations have been treated in the statistical models as parallel prognostic models, and the importance of both types of expectations is emphasized in group statistics. However, research has not yet explored situations in which patients and providers have similar expectations (per case) or in which there is substantial mismatch between patients and providers (per case). The overlap or distinctness of both perspectives requires a grouping of dyads in clusters to identify dyads with adequate or inadequate matches.[39] Such dyads can be grouped via cluster analysis into meaningful groups with similar patterns of expectations (by patients and providers).

Patients' or providers' positive expectations for treatment outcomes may be associated with greater treatment effects. However, it is unclear whether the expectations of providers about treatment outcomes match the expectations of patients. We therefore generated patient–provider expectation clusters (PPECs), which are groups of patient–provider dyads with specific patterns of expectations of patients and providers. We describe the clinical characteristics of these clusters and examine the level of pain reduction after treatment in different PPECs.

Methods

Design and Interventions

We used data from 4 trials; the detailed methods and results of the efficacy trials have been published elsewhere.[6,28,32,51] A total of 304 patients with migraine with or without aura, 296 patients with tension-type headache, 301 patients with chronic low back pain, and 300 patients with chronic osteoarthritis of the knee were randomized in a 2:1:1 ratio to semistandardized acupuncture treatment, standardized sham acupuncture treatment (superficial needling of no acupuncture points), or a no treatment wait list control group. Sham acupuncture served as a sham control intervention. Patients were blinded to the comparison of acupuncture with sham acupuncture. Because the focus of our analyses was on patients receiving immediate treatment (n = 864), the data from patients allocated to the wait list group were deleted (n = 304). The original study protocols were approved by the relevant ethical review boards. For this study, we included only patients receiving acupuncture or sham acupuncture. Patients on the waiting list were excluded because their changes in symptoms are minimal and because the topic of "expectation" for patients on a waiting list would be irrelevant from a theoretical perspective.

Assessment of Expectations

The patients' expectations were evaluated using 2 questions at baseline before randomization:

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