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Effectiveness of Jyoti Meditation for Patients With Chronic Neck Pain and Psychological Distress—A Randomized Controlled Clinical Trial

Michael Jeitler,[*,†] Stefan Brunnhuber,[‡] Larissa Meier,[*,†] Rainer Lüdtke,[§] Arndt Büssing,[‖] Christian Kessler,[*,†] and Andreas Michalsen[*,†]

**Institute of Social Medicine, Epidemiology and Health Economics, Charité-Universitätsmedizin, Berlin, Germany.*
[†]Department of Internal and Complementary Medicine, Immanuel Hospital Berlin, Berlin, Germany.
[‡]Department for Psychiatry and Psychotherapy, University Hospital Salzburg, Salzburg, Austria.
[§]Karl and Veronica Carstens Foundation, Essen, Germany.
[‖]University Witten-Herdecke, Chair of Integrative Medicine, Witten, Germany.

Abstract: **Chronic neck pain is a common medical complaint partly mediated by psychosocial distress and having a high socioeconomic impact. There is preliminary evidence that stress reduction by meditation might be beneficial in chronic pain syndromes. We aimed to evaluate the effectiveness of an 8-week meditation program (jyoti meditation) in patients with chronic neck pain by means of a randomized clinical trial. Eighty-nine patients (aged 49.7 ± 10.5 years, 73 female) with chronic neck pain who scored >40 mm on a 100-mm visual analog scale and had concomitant increased perceived stress were randomized to an 8-week meditation program (jyoti meditation) with weekly 90-minute classes (n = 45) or to a home-based exercise program (n = 44) with a wait list offer for meditation. Both groups were instructed to practice at home. Outcomes were assessed at baseline and after 8 weeks. Primary outcome measure was change of mean pain at rest (visual analog scale score) from baseline to week 8. Secondary outcomes included pain at motion, functional disability, pain-related bothersomeness, perceived stress, quality of life, and psychological outcomes. Patients had neck pain for a mean of 11 years. Eighteen patients in the meditation group and 16 patients in the exercise group were lost to follow-up. Meditation training significantly reduced pain when compared to the exercise group after 8 weeks (reduction of 45.5 ± 23.3 mm to 21.6 ± 17.2 mm in the meditation group, and 43.8 ± 22.0 mm to 37.7 ± 21.5 mm in the exercise group; mean difference: 13.2 mm [95% confidence interval: 2.1, 24.4; *P* = .02]). Pain-related bothersomeness decreased more in the meditation group (group difference 11.0 mm [95% confidence interval: 1.0, 21.0; *P* = .03]). No significant treatment effects were found for pain at motion, psychological scores, and quality of life, although the meditation group showed nonsignificant greater improvements compared to the exercise group. In conclusion, meditation may support chronic pain patients in pain reduction and pain coping. Further well-designed studies including more active control comparisons and longer-term follow-up are warranted.**

***Perspective:** This article presents the results of a randomized controlled trial on the clinical effects of an 8-week meditation program or self-care exercise in patients with chronic neck pain. Meditation reduced pain at rest but not disability and might be a useful treatment option for pain management of chronic neck pain.*

Key words: *Meditation, chronic neck pain, pain, stress reduction, randomized controlled trial.*

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Address reprint requests to Andreas Michalsen, MD, Immanuel Krankenhaus Berlin, Klinik für Innere Medizin, Abteilung Naturheilkunde Charité–Universitätsmedizin Berlin, Hochschulambulanz für Naturheilkunde der Charité Berlin, Königstrasse 63, 14109 Berlin, Germany. E-mail: a.michalsen@immanuel.de
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Neck pain has a high 12-month prevalence of about 30–50%.[23] Studies identified a point prevalence between 6% and 22%, which increases with age.[3,15,23] Chronic pain can seriously affect the quality of social and working life of patients and lead to serious comorbidities such as depression. A recent survey revealed that 20% of patients with chronic pain conditions are also diagnosed with depression.[4] Recurrent and chronic pain accounts for a significant portion of health-related absenteeism, decreased work performance, and loss of employment. Furthermore, chronic neck pain is highly cost-intensive because of the increased demand for health care.[2]

There is increasing evidence that psychological stress (distress) contributes to the pathogenesis, progression, and chronification of chronic pain syndromes. A recent survey of one of the large German health insurance companies revealed that 80% of surveyed people feel stressed frequently and 30% feel stressed most of the time.[14] Patients with chronic neck pain frequently experience distress, and chronic neck pain and stress are interrelated and have had fewer treatment options.[7,8,47]

In the recent past, meditation has been increasingly used in the adjunctive treatment of chronic disease conditions. Short-term programs of mindfulness meditation and mindfulness-based stress reduction (MBSR) have been introduced for supportive treatment of chronic pain patients.[26-28] Mindfulness programs have demonstrated beneficial clinical effects for various health problems, including anxiety disorders,[22] mood, and quality of life in cancer patients[6] and the prevention of relapse of depression,[36] among others. Another meditation technique, transcendental meditation, has been investigated mainly in cardiovascular disease and depression. Meta-analyses on mindfulness meditation or related programs indicate small to medium effects in chronic pain or chronic low back pain.[11,38,51] In a meta-analysis on the psychological effects of meditation, the effect sizes pointed to a medium average effect but also showed that findings may vary among the different meditation techniques.[43] There are several mechanisms that may contribute to the putative pain-relieving effect of meditation, for example, central neuromodulatory effects that reduce pain perception, psychological effects that allow a dissociation of pain and its emotional and affective experience, and somatic effects on muscle tension and tissue perfusion by release of stress hormones. Mindfulness programs and other meditation techniques such as transcendental meditation, zen, or jyoti may differ in their health-related effects. MBSR, besides including meditation, puts a strong emphasis on cultivating a mindful and acceptance-based attitude and applying this to any experience in daily life, whereas other forms such as jyoti and transcendental meditation focus on the meditation experience and its relaxing effects in particular. So far, there have been only a few studies investigating the effects of meditation in chronic pain patients, most of them using mindfulness meditation. Most of these studies are limited by a retrospective design, the lack of a control group, or a heterogenous study sample with mixed diagnoses. Two randomized pilot studies with smaller sample sizes investigated the effects of mindfulness meditation in community-dwelling older adults with lower back pain.[34,35] No study so far has investigated patients with chronic neck pain. Against this background, we aimed to evaluate the effectiveness of a meditation program in patients with chronic neck pain by means of a randomized controlled clinical trial. As previous research has shown that a stress-relieving effect of meditation[18] and chronic pain is frequently associated with distress,[1,25] we further aimed to focus on patients with underlying distress and to compare the effects of the meditation program on pain, perceived stress, and psychological well-being. We hypothesized that an 8-week meditation program will decrease pain better than a standard exercise program and that pain relief will be paralleled by stress reduction.

Methods

This study was designed as a randomized controlled clinical trial. All study participants gave their informed consent. The study protocol was reviewed and approved by the ethics committee of the Charité-University Medical Centre, Berlin, Germany. Patients were enrolled between May 2010 and February 2011; interventions and follow-up were completed by June 2011. All study procedures and data collection were carried out at the outpatient department of the Immanuel Krankenhaus Berlin, Department of Internal and Complementary Medicine.

Study Procedures

We recruited participants by means of press releases offering cost-free participation in a study for chronic neck pain. Potential participants were screened for eligibility by telephone interview, and eligible candidates were scheduled for an enrollment appointment. A study physician performed the candidates' physical examinations. Thereafter, each eligible participant was randomly assigned to either an 8-week meditation group or a home-based exercise program with an additional offer to join a meditation class after 8 weeks without further evaluation (wait list offer). The written and verbal study information emphasized that both treatments might be useful for the treatment of chronic neck pain.

Study Participants

Patients of both sexes were eligible if they were between 18 and 65 years old and for at least 3 months had been having neck pain at rest or neck pain at motion. Chronic neck pain had to be diagnosed as nonspecific (tension neck syndrome; cervical spondylosis). Pain intensity needed to have minimum intensity of >40 mm on the 100-mm visual analog scale (VAS) in the last 7 days and a minimum intensity of self-perceived distress of >35 mm on a 100-mm VAS. This VAS asked "How stressed you feel generally?" and had the anchors "not at all" and "as bad as it could be."[21,32] Assessment of pain and