NESTORIUC Y, MARTIN A. EFFICACY OF BIOFEEDBACK FOR MIGRAINE: A META-ANALYSIS. *PAIN* 2007;128:111–127.

Migraine is a highly prevalent disease, with prevalence rates of as high as 18% in women and 7% in men in North America. Although effective drugs exist, their use is often limited. Concomitantly, biofeedback has been reported as a suggested mode for migraine treatment. In the present paper, Nestoriuc and Martin meta-analytically examined the efficacy of biofeedback in treating migraine. Their study included an extensive literature search, with inclusion of studies according to the following criteria: *(1)* studies evaluating individually administered biofeedback in adults; *(2)* diagnosis made according to a standardized classification system; *(3)* treatment outcome measured by standardized diaries, pain scales, or other psychologic questionnaires; *(4)* follow-up of at least 6 months in length; *(5)* sufficient statistical data for the calculation of effect sizes; and *(6)* publicatoin in English or German. Overall, 55 studies met the inclusion criteria and were analyzed, including randomized controlled trials and pre/post trials.

The analysis included 117 treatment conditions (84 active biofeedback and 33 control conditions). The studies included 2,229 migraine patients, of whom 1,718 were assigned to biofeedback groups and 511 to control groups. The meta-analysis showed a medium effect size for all biofeedback interventions and proved stable over an average follow-up phase of 17 months. Also, biofeedback was more effective than control conditions. Frequency of migraine attacks and perceived self-efficacy demonstrated the strongest improvements. Biofeedback combined with home training was more effective than therapies without home training. Furthermore, an intention-to-treat analysis showed that the treatment effects remained stable, even when dropouts were considered as nonresponders.

The results provide strong evidence of the efficacy of biofeedback for migraine. The treatment was generally well accepted, and none of the reviewed studies reported any adverse effects. The average attrition rates were low, both absolutely and relative to those reported in pharmacologic studies. Meta-analysis showed that biofeedback significantly and substantially reduces pain and psychologic symptoms of highly chronic patients within only 11 sessions. Thus, biofeedback can be recommended to therapists, physicians, and health-care providers as an evidence-based behavioral treatment option for prevention of migraine attacks. *(IE)*

WINOCUR E, HERMESH H, LITTNER D, SHILOH R, PELEG L, ELI I. SIGNS OF BRUXISM AND TEMPOROMANDIBULAR DISORDERS AMONG PSYCHIATRIC PATIENTS. ORAL SURG ORAL MED ORAL PATHOL ORAL RADIOL ENDOD 2007;103:60–63.

Little has been published in the scientific literature regarding bruxism and temporomandibular disorders (TMD) among patients suffering from psychiatric disorders. These patients pose a dual problem to the TMD specialist. They may be more prone to suffer from TMD because of their medications; however, their actual pain sensitivity and report may be lower than that of the healthy population. In the present study the prevalence of bruxism and TMD signs among psychiatric patients was evaluated and compared to that of a healthy control group. The clinical examination included measurement of the interincisal distance and of the active and passive mouth opening, presence of joint clicking/crepitation, joint and muscle sensitivity to palpation and presence of wear facets on teeth. For the psychiatric patients, information regarding the name of prescribed medications and time of use were also collected.

The data obtained from 77 psychiatric patients (mean age, 39 years; 42% female) were compared to a group of 50 healthy individuals (mean age, 36 years; 76% female). Schizophrenia was diagnosed in 90% of the psychiatric patients. Other diagnoses were psychotic depression, obsessive-compulsive disorder, bipolar disorder, personality disorder, borderline disorder, and dependent personality disorder (several patients had multiple diagnoses).

Abnormal attrition was evident in about 50% of the psychiatric patients compared with 20% in the control ($P < .005$). Significant differences between groups were also apparent for mean sensitivity to palpation, joint sensitivity to palpation, and range of mouth opening. There was no association between the time of receiving treatment with dopamine antagonists (or any other psychotropic drugs) and TMD signs and symptoms.

The higher prevalence of bruxism and signs of TMD in psychiatric patients is a major clinical comorbidity and calls for further attention, especially since patients with schizophrenia are often reported as having significantly higher pain thresholds than a healthy population. The reduced pain sensitivity in these patients may be a physiologic dysfunction that affects the transmission of the noxious stimulus but may also reflect affective and sensory abnormalities. One possible outcome is extensive hard tissue loss, as evidenced by the abnormal tooth attrition.

The relatively high prevalence of TMD signs in patients with psychiatric disease is a clinical problem that has not received adequate attention. While such patients suffer from numerous problems, their oral health is often neglected. It is important that proper care is taken to assure that these patients are evaluated and treated for TMD and other oral problems. *(IE)*

DEFRIN R, LOTAN M, PICK CG. THE EVALUATION OF ACUTE PAIN IN INDIVIDUALS WITH COGNITIVE IMPAIRMENT: A DIFFERENT EFFECT OF THE LEVEL OF IMPAIRMENT. PAIN 2006;124:312–320.

Individuals with cognitive impairment (CI), particularly those in an institutional setting, are at an increased risk of experiencing pain. Nonetheless, these individuals are often prescribed significantly less analgesic medications compared with cognitively intact individuals. Furthermore, these individuals may experience delayed diagnosis and management of painful medical conditions, setbacks in hospitalization, and increased death rates. This injustice might result from the tendency of individuals with CI not to report pain in potentially harmful situations and from the difficulty in assessing pain in these individuals because of their poor communication skills. Consequently, individuals with CI have been regarded as less sensitive to pain than their cognitively intact peers. Recently, this assumption was refuted when pain threshold of individuals with mild–moderate CI was found to be lower than that of controls. The present study investigated whether the level of CI affects acute pain behavior and how it is manifested. Participants were 159 individuals (mean age, 42 ± 12 years), 121 with CI and 38 with normal cognition (controls). Participants' behavior before and during acute pain (influenza vaccination) was coded by 2 raters with the Facial Action Coding System (FACS) and the Non-Communicating Children's Pain Checklist (NCCPC-R). Individuals with severe–profound CI exhibited elevated FACS and NCCPC-R values at baseline compared with all other groups ($P < .01$). Both FACS and NCCPC-R scores of individuals with mild–moderate CI and controls increased significantly during vaccination ($P < .001$). In contrast, individuals with severe–profound CI exhibited high rates of "freezing reaction" (stillness) during vaccination, manifested mainly in the face, thus resulting in elevated NCCPC-R scores. The results suggest that the level of CI affects baseline

as well as pain behavior, and it is therefore necessary to choose an appropriate behavioral tool to measure pain in these individuals accordingly. For example, tools based on facial reactions alone might provide the false impression that individuals with severe–profound CI are insensitive to pain (because of freezing).

The study by Defrin et al, much like the study by Winocur et al already summarized, draws our attention to a less-studied population with regard to pain, subjects whose ability to communicate their sensations and feelings may be severely impaired. As pain is a subjective experience mostly evaluated according to subject's reactions and report, lack of reaction or report is sometimes interpreted as lack of pain. Defrin et al show that lack of bodily manifestation among patients with CI does not necessarily mean that pain is not present. Thus, care should be taken that CI patients are not underdiagnosed and/or undertreated for problems such as TMD and orofacial pain. *(IE)*

LYNCH AM, KASHIKAR-ZUCK S, GOLDSCHNEIDER KR, JONES BA. SEX AND AGE DIFFERENCES IN COPING STYLES AMONG CHILDREN WITH CHRONIC PAIN. J PAIN SYMPTOM MANAGE 2007;33:208–216.

It is well established that there are significant differences in the way men and women cope with chronic pain. However, little research has specifically examined whether similar sex differences in pain coping exist among children and adolescents who suffer from chronic pain. Lynch et al examined the coping strategies of 272 young chronic patients. Their sample consisted of 2 age groups to assess potential developmental differences: children aged 8 to 12 years and adolescents aged 13 to 18 years. All patients experienced non–cancer-related chronic pain (pain for > 3 months). Measures included the use of a visual analog scale (VAS) and the Pain Coping Questionnaire (PCQ), a 39-item self-report questionnaire developed to assess pain-coping strategies and pain-coping efficacy in children and adolescents.

Significant sex differences in coping strategies were found. After controlling for pain intensity, girls used social support seeking more than boys, while boys used more behavioral distraction techniques. Adolescents engaged in more positive self-statements (a cognitive strategy) than younger children. Both boys and girls showed a trend toward pain-coping efficacy being negatively correlated with average pain intensity. For girls, pain-coping efficacy was also negatively correlated with internalizing/catastrophizing. However, no sex or age differences in coping efficacy were found.

The study shows that the sex differences in pain coping apparent in the adult pain literature begin at a young age. Regardless of sex or age, pediatric chronic pain patients share many similar coping strategies but also manifest some unique differences. Generally, both boys and girls used a variety of adaptive and maladaptive strategies to manage their pain, such as distraction, problem solving, seeking social support, and internalizing/catastrophizing.

The study provides the basis for future research examining the role of potential psychosocial influences (eg, parents, peers, health-care professionals) in the development of coping-strategy variations among males and females. Sensitivity to these differences may allow tailoring of treatment plans, such as including adaptive strategies that may not be consistent with sex-role expectations to manage pain (eg, teaching girls distraction strategies or educating boys on better ways to communicate their pain). The increasing use of cognitive strategies with age suggests that treatment approaches that include age-appropriate cognitive techniques (such as challenging negative thoughts) for adolescents might be beneficial. A better general understanding of the developmental stages of pain coping may help us to design life stage–appropriate treatment plans for pediatric pain conditions. *(IE)*

WITT CM, JENA S, BRINKHAUS B, LIECKER B, WEGSCHEIDER K, WILLICH SN. ACUPUNCTURE FOR PATIENTS WITH CHRONIC NECK PAIN. PAIN 2006;125(1–2):98–106.

Neck pain is a common complaint with a point prevalence ranging between 10% and 18% and lifetime prevalence up to 43% in women. Acupuncture is often used by patients with neck pain, but there is a lack of information about its effectiveness in routine medical care. The aim of the study by Witt et al was to investigate the effectiveness of acupuncture (in addition to routine care) in patients with chronic neck pain compared to treatment with routine care alone. The results were collected as part of a wide, multicenter randomized controlled trial. Patients were randomly allocated to an acupuncture group or a control group (no acupuncture). The acupuncture group received immediate treatment (up to 15 acupuncture sessions over 3 months). The control group received acupuncture treatment after a delay of 3 months. Patients who declined to be randomized were included in a third arm, receiving immediate acupuncture treatment (nonrandomized acupuncture group). Follow-up period per patient was 3 months, following an assessment after the initial active treatment phase at 3 months. Patients were allowed to receive usual medical care in addition to study treatment. Of 14,161 patients (mean age, 50.9 ± 13.1 years; 68% female), 1,880 were randomized to the acupuncture group and 1,886 to the control group, while 10,395 were included in the nonrandomized acupuncture group.

Patients completed standardized questionnaires (including sociodemographic characteristics) at baseline and after 3 and 6 months. The primary outcome measure was neck pain and disability after 3 months as assessed by the validated neck pain and disability scale developed by Wheeler (1999). The 20 items of this scale measure pain intensity; its interference with vocational, recreational, social, and functional aspects of living; and the presence and extent of associated factors. One secondary outcome was the reduced percentage of neck pain and disability. Another secondary outcome parameter included changes of health-related quality of life.

Among the randomized subjects, neck pain and disability improvement was more pronounced in the acupuncture group than in the control group after 3 months and significantly more pronounced in the acupuncture group than in the control group for neck pain, disability, and quality of life. Treatment outcomes after acupuncture were better for patients who consented to randomization compared to patients who declined randomization.

In general, patients with chronic neck pain treated with acupuncture in addition to routine care, showed significant improvements in symptoms and quality of life compared to patients who received only routine care. An important finding was that improvements seen immediately after completing 3 months of treatment continued for at least another 3 months, although patients received no further acupuncture treatment.

The strength of the study is in the large number of patients in each group. The study showed that treating patients with chronic neck pain in routine primary care combined with acupuncture resulted in clinically relevant evidence-based advantages. Thus, the incorporation of acupuncture in the treatment of patients with other forms of chronic pain (eg, orofacial pain) should be positively considered. *(IE)*