

**Results:** Pain-prevalence was 78.0% (58.5% mild and 19.5% severe pain symptoms). Severe pain was significantly associated with depression ( $p < 0.005$ ) and anxiety ( $p < 0.001$ ). Recognition of pain by physicians was 28.0%–59.3% depending on clinical status and severity of pain. Analgesics were received by 45.0% in need (Acetaminophen, Metamizole sodium, NSAIDs).

**Conclusion:** NH-residents suffer significantly from a lot of physical and psychosocial problems and pain is among them. Pain was associated mostly with poor clinical status, loneliness, depression and anxiety. Pain requires better assessment and treatment. This highlights an ongoing need for palliative care services establishment in NHs. Future studies should focus on interventions to improve recognition and treatment of pain.

## 816

### MIDAS QUESTIONNAIRE IN A GREEK SAMPLE OF HEADACHE PATIENTS: VALIDITY, RELIABILITY, RESPONSIVENESS AND PSYCHOMETRICS

G. Georgoudis\*, A. Paraxou, X. Panagopoulou, G. Papathanasiou.  
Department of Physiotherapy, Technological Institute of Athens, Pireas, Athens, Greece

**Introduction:** MIDAS questionnaire is a valid tool to functional assess headaches (migraine and tension-type). Aim of this study was to culturally adapt MIDAS into Greek and assess the psychometrics of the Greek version (MIDAS-GR).

**Methods:** A sample of 121 patients attending two outpatient clinics participated in the study. The adaptation of MIDAS into Greek (MIDAS-GR) followed the guidelines for cross-cultural research tools. A number of validated into Greek questionnaires was also completed at all times MIDAS was administered: the Short-form McGill Pain Questionnaire (SF-MPQ), the Hospital Anxiety & Depression scale (HAD), the Pain Catastrophizing Scale (PCS) and the SF-12. A subgroup was assessed for MIDAS-GR test-retest reliability (7 days apart) and another for its sensitivity (before and after-treatment with 3 months between).

**Results:** Internal consistency was satisfactory ( $\alpha = 0.75$ ) for MIDAS-GR. Test-retest reliability for every single item and the total score was also satisfactory ( $ICC = 0.74$ – $0.85$ ). A significant reduction in the total MIDAS-GR score ( $t = 3.6$ ,  $p < 0.01$ ) coupled with a subjective estimation of improvement, was evidenced after 15 sessions of physiotherapy/acupuncture treatment of headache (responsiveness). MIDAS psychometrics showed no significant associations with tools such as the SF-MPQ, the HAD and the PCS (discriminant construct validity). A significant correlation was shown between MIDAS-GR and the SF-12 ( $r = -0.30$ ,  $p < 0.05$ ) (criterion-related validity).

**Discussion:** The Greek version of MIDAS was shown to be a valid, reliable and sensitive tool to assess headaches in Greek outpatients. The results for MIDAS-GR are comparable to the original and other versions of cultural adaptations in other languages.

## 817

### NEURAL CONTROL OF SUPERFICIAL NECK MUSCLES DURING MULTIDIRECTIONAL FORCE IN WOMEN WITH WHIPLASH-INDUCED NECK PAIN

R. Lindstroem<sup>1</sup>\*, D. Farina<sup>1</sup>, L. Rechter<sup>2</sup>, D. Falla<sup>1</sup>. <sup>1</sup>Department of Health Science and Technology, Aalborg University, Aalborg, Denmark; <sup>2</sup>Multidisciplinary Pain Center, Aalborg, Denmark

**Aim:** This study examined the relationship between impaired neck strength (motor output) and neural control of the superficial neck muscles during multidirectional force production in patients with whiplash.

**Methods:** Ten women with whiplash (age:  $37.4 \pm 10.0$  years; duration:  $5.2 \pm 5.5$  years) and ten age- and gender-matched healthy controls participated. Surface electromyographic (EMG) signals were recorded from the sternocleidomastoid and splenius capitis muscles bilaterally while subjects performed maximum voluntary

isometric contractions (MVC) in flexion, extension and contractions at a force of 15 N, varying force direction in the range  $0$ – $360^\circ$ . Tuning curves of surface EMG average rectified value (ARV) were computed from the circular contractions. The mean point of the ARV curves defined a directional vector, whose strength, expressed as a percent of the mean ARV during the entire task, defined the directional specificity of muscle activity.

**Results:** Patients with whiplash displayed reduced cervical strength ( $P < 0.05$ ) and lower specificity of sternocleidomastoid and splenius capitis activity compared to controls ( $P < 0.05$ ). Maximal flexion force and specificity of sternocleidomastoid activity were correlated ( $R^2 = 0.55$ ;  $P < 0.05$ ). The specificity of activity of the splenius capitis was also correlated with the extension/flexion force ratio in the patient group ( $R^2 = 0.51$ ;  $P < 0.05$ ).

**Conclusion:** Women with chronic whiplash-induced neck pain display reduced specificity of activity of their superficial neck muscles resulting in higher antagonistic neck muscle activity during isometric contractions. The reduced specificity is associated with impaired neck strength.

## 818

### EFFECT OF THERMODE APPLICATION PRESSURE ON THERMAL THRESHOLD DETECTION

G. Pavlakovic\*, I. Klinke, K. Züchner, T.A. Crozier, H. Pavlakovic, M. Strumpf. Center for Anesthesiology, Emergency and Intensive Care Medicine, Pain Therapy Clinic, University Hospital Göttingen, Göttingen, Germany

Studies using quantitative sensory testing (QST) often present incongruent results due to intra- and inter-subject as well as inter-observer variability. Eliminating or reducing the factors responsible for this variability is of great interest, as this increases reliability and reproducibility of QST. Thermal sensory threshold determination is a crucial part of QST. It was previously suggested that the pressure of the thermode on the skin could influence measurements. In order to verify this, we developed a new thermode with a built-in pressure sensor. Thresholds obtained with this thermode were compared to those obtained with a commercially available Medoc TSA-II® thermotesting device.

Heat detection and heat pain detection thresholds were higher, and cold detection thresholds (but not cold pain detection thresholds) were lower when measured with our thermode than they were with the Medoc thermode. Analysis of the heat transfer capacity of the thermodes indicated that the material of the skin contact surface of the thermode may play a role in these shifts in threshold values.

Altering the thermode pressure on the skin did not affect the thermal thresholds. Furthermore, the intra-subject variability of the measurements (minimal-to-maximal range of measured threshold values in individual subjects) was also not influenced by the pressure with which the thermode was attached to the skin. Our results suggest that the pressure with which the thermode is attached to the skin does not significantly affect the intra- and inter-subject reproducibility of the thermal sensory threshold measurements.

## 819

### INFLUENCE OF INTRINSIC NOISE GENERATED BY A THERMOTESTING DEVICE ON THERMAL SENSORY DETECTION AND THERMAL PAIN DETECTION THRESHOLDS

G. Pavlakovic\*, K. Züchner, H. Pavlakovic, T.A. Crozier, M. Strumpf. Center for Anesthesiology, Emergency and Intensive Care Medicine, Pain Therapy Clinic, University Hospital Göttingen, Göttingen, Germany

Various factors can influence thermal perception threshold measurements and contribute significantly to unwanted variability of the tests. To minimize this variability, the testing should be performed under strictly controlled conditions. Identifying the factors that increase the variability and eliminating their influence should increase reliability and reproducibility.