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## **Master thesis research ready-to-use for clinical application**

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## **Abstract**

### **Research Report**

**Relevance.** Clinically-oriented master thesis research fits perfectly within the theme 'Research, Education and Practice' since it can add evidence-based value to the physiotherapy practice. Within this respect the clinical relevance of the thesis topic is crucial. An attempt was made taking in account that physiotherapists are consulted regularly by patients suffering from headache. Especially women were targeted because of their predisposition to develop chronic pain. Within this perspective the pericranial 'Total Tenderness Score (TTS)' could be useful in detecting female patients with posture-related headache at risk of chronification.

**Purpose.** To compare pericranial tenderness of females with posture-related headache versus matched healthy controls.

**Methods.** A single-blind, cross-sectional study was set up to compare pericranial tenderness between 20 females with posture-related headache ( $29.4 \pm 13.2$  years) and 20 age- and gender-matched healthy controls ( $30.1 \pm 13.7$  years). A post-hoc power analysis revealed a power of 99%.

Headache-group inclusion criteria were: females, aged between 18 and 58 years, meeting the diagnostic criteria of episodic tension-type or cervicogenic headache according to the International Headache Society, headache provoked by posture. Exclusion-criteria: pregnancy, physiotherapy for headache 12 months before the study, serious pathology and a history of neck or head trauma.

Control-group inclusion criteria were: healthy age-matched females. Exclusion-criteria: pregnancy, history of neck or head trauma.

The study was approved by the Medical Ethical Committee of the 'Ziekenhuis Oost-Limburg' (B371201423025).

Pericranial tenderness was bilaterally measured with the TTS in the suboccipital, temporal, frontal, masseter, upper trapezius, levator scapula and sternocleidomastoid muscle-insertions.

Data-analysis was done using SPSS (version 22) with a 95% confidence level ( $p < 0.05$ ). Equality of groups and comparison of tenderness scores between groups were analyzed by the Mann-Whitney U-test.

**Results.** The Headache-group ( $1.25 \pm 0.89$ ) showed a significant higher TTS compared to the Control-group ( $0.62 \pm 0.70$ ). More specifically, significant higher tenderness scores were seen in the Headache-group for the left suboccipital, temporal, masseter, upper trapezius, levator scapula and sternocleidomastoid muscles and the right suboccipital, frontal, upper trapezius and levator scapula muscles. Comparing the cervical (upper trapezius, sternocleidomastoid, suboccipital, levator scapula) and the cephalic (temporal, frontal, masseter) tenderness scores between groups revealed significant higher scores in the Headache-group (cervical  $1.30 \pm 0.90$  vs.  $0.57 \pm 0.70$ ; cephalic  $1.18 \pm 0.88$  vs.  $0.68 \pm 0.74$ ).

**Discussion and conclusion.** The pericranial TTS was twice as high in the Headache-group. Cervical, cephalic and muscle-specific tenderness scores were significantly higher in the Headache-group. The TTS seems sensitive enough to discriminate between patients with posture-related headache and healthy controls.

These results encourage further profound investigation between posture and its role in peripheral sensitization. Furthermore, more research is needed to determine the most adequate physiotherapeutic approach in sensitized patients with posture-related headache.

**Impact and implications.** Clinically oriented and feasible master theses could benefit multiple parties: (1) they can provide answers to clinical questions in the field and strengthen the interaction between educators, research and the practitioners, (2) clinically-oriented research may motivate and satisfy students since their experience can be directly applied in future practice.

**Keywords.** Headache, females, pericranial sensitivity

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