

Physiotherapy Science Research Unit

Neck Pain- and Whiplash-Associated Disorders: A Cohort Study

Neck pain is among the most common musculoskeletal disorders, with a lifetime prevalence of 54%. Some of those who experience neck pain develop persistent symptoms. The mechanisms leading from acute to persistent neck pain are not fully understood. Neck pain treatment is often unsatisfactory and centered around a biomedical approach. Research on the topic is therefore urgently needed. This study observes the course of neck pain in a patient cohort over one year. Of primary interest are the associations between physical and psychosocial factors and their influence on the remission of acute neck pain. This study's results can inform the future prevention and treatment of neck pain or whiplash-associated disorders.

Background

Neck pain-associated disorders (NAD) and whiplash-associated disorders (WAD) are major health problems. Although most patients recover from acute neck pain within the first three months, some develop persistent pain. Whiplash occurs less frequently, but those affected often suffer more severely from various complaints. Patients who develop persistent symptoms experience recurring pain, leading to a reduced quality of life. On a macro level, NAD represents a considerable burden on healthcare spending and social costs.

The exact mechanisms that lead to persistent neck pain are not yet fully understood. Recent scientific findings show a close relationship between physical

and psychosocial factors that may influence the course of neck pain and lead to chronic disability. Relevant psychosocial risk factors include:

- Distress, depressive symptoms and anxiety
- Unrealistic expectations of recovery and illness perception
- Suboptimal pain-related activity patterns, e.g. avoidance or overactivity
- Maladaptive coping behaviours.

These findings reflect the necessity to identify factors predictive of pain outcomes to understand their associations and how they relate to the persistence of symptoms. Early interventions that consider the different factors influencing the course of neck pain would save costs and improve individual outcomes.

Aim

This prospective cohort study aims to observe clinical factors, such as pain, body perception, or movement control, and psychosocial factors, such as stress, depressive symptoms, or anxiety, in a cohort of individuals with NAD or WAD over one year. In a subgroup using functional MRI (fMRI), the cervical spine's representation and neuroplastic changes in sensorimotor networks will be investigated.

The results of the study have the potential to be translated into target-group-oriented assessment, treatment, and prevention of persistent NAD and WAD by different healthcare professionals.

Methods

The NAD and WAD cohorts will be followed for 12 months after the onset of pain; with 3 clinical assessments and 4 surveys administered via an online questionnaire.

Inclusion criteria:

- Acute neck pain or whiplash-associated disorder (for a maximum duration of 4 weeks)
- In case of recurring neck pain, pain-free for at least three months before the onset of the current pain
- Age between 18 and 65 years
- German speaking

Clinical Assessments:

Participation in physical examinations at local testing centres

- 3 appointments within one year (1, 3 and 6 months after the onset of neck pain)
- Month 1, 3, and 6: Assessment of pain, body perception and movement control
- Month 1 and 6: Analysis of hair cortisol concentrations as a biomarker for long-term stress
- Duration of clinical assessment: ca. 30-60 minutes
- In a subgroup: functional MRI assessment; duration: ca. 90 minutes

Questionnaire

Survey via an online questionnaire on a PC or smartphone at four time points within a year (1,3, 6, and 12 months) with questions about:

- Pain perception

- Psychosocial factors such as stress, behaviour, attention
- Physical activity

Answering these questions at home takes about 30 minutes.

All data will be treated confidentially. In the event of non-participation, all personal data will be deleted.

Project lead

Dr. Sabina Hotz Boendermaker

Project duration

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Project Team

Prof. Dr. Hannu Luomajoki
Leah Reicherzer; MSc
Rita Morf, MSc, cand. PhD

Project partners

Universitätsspital Zürich, Department of Neuroradiology
Medbase Group
Medbase Winterthur Archhöfe
Physion Meilen

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Project status

Realisation

Contact

ZHAW Departement Gesundheit
Forschung & Entwicklung Physiotherapie
Dr. Sabina Hotz Boendermaker
Katharina-Sulzer-Platz 9
Postfach
CH-8401 Winterthur

+41 58 934 64 01

nackenschmerzen.gesundheit@zhaw.ch

www.zhaw.ch/gesundheit