



The Network Models of Fatigue and Pain in Rheumatic and Musculoskeletal Diseases Study

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TITLE: The Network Models of Fatigue and Pain in Rheumatic and Musculoskeletal Diseases Study

Topic: Musculoskeletal Pain and Rheumatology

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Abstract:

Background and aims: Pain and fatigue are predominant and debilitating symptoms for people with Rheumatic and Musculoskeletal Diseases (RMDs)¹, even in patients who have no overt signs of inflammation, i.e. in patient in remission or with low disease activity². Both symptoms are influenced by a complex network of mutually interacting factors that include physical (dis)ability, psychological resilience and vulnerability, social factors, sleep quality, obesity, and disease activity^{1,3,4}. Not only the severity of these distinct factors are assumed to differ between RMDs as well as between individual patients^{5,6}, but the strength with which each factor influences pain and fatigue will also differ between RMDs and patients. The aims of the *Network Models of Fatigue and Pain in Rheumatic and Musculoskeletal Diseases Study* are to describe the existing network models with influencing factors of pain and fatigue in (i) specific RMDs and in (ii) subgroups of patients (across all RMDs) with high scores on specific maintaining factors (e.g., physical inactivity, obesity, sleep problems, inflammatory activity, psychological distress factors). One of the priorities of the present research project is to ensure the scalability of it by including both participants and researchers from as many countries as possible. Therefore, the present communication presents the protocol of the project in order to find collaborators willing to conduct the research in their own countries.

Methods: Adults with at least one RMD will be recruited into this online cross-sectional project. For analyses, a large sample size is needed from different countries and cultures. Thus, data collection will be done via a brief and single electronic survey. Participants will self-report their levels of pain and fatigue using a visual analogue scale (VAS). Potential biopsychosocial factors that may play a key role in the network model of pain and fatigue will be derived from literature and identified by interviews with patients, rheumatologists and health professionals from the Netherlands and Spain. The steering committee of the present project will decide which factors will be measured; priority will be given to those that can be modified in self-management support in common health centers worldwide.

Results: The steering committee has been established (i.e., authors of the present abstract), which ensures that the study will be conducted in at least Ireland, the Netherlands, Portugal, Spain and the United Kingdom. The steering committee involves a patient as a research partner and researchers/health professionals in the field of Epidemiology, Nursing, Physiotherapy, Psychology, Sport Sciences and Health Sciences. Ethical approval for conducting the study in the Netherlands and Spain has been already obtained.

Conclusions: This will be the first multinational study on networks models of pain and fatigue in different RMDs. The study will yield information for clinical practice, e.g., by showing whether and in which way networks of pain and fatigue differ between RMDs and between patients with high scores on specific maintaining factors. A limitation of this study is its cross-sectional nature, which impedes to determine which factors are causes and which factors are consequences in the associations under study. Additionally, few measurements of each variable will be collected. Although this helps to obtain a comprehensive picture of the variables under study in sufficiently large samples, it may limit the reliability.

Conflicts of Interest: The authors declare no conflicts of interest to report.

Ethical permissions: Ethical approval for conducting the study in the Netherlands and Spain has been already obtained from Utrecht University (reference FETC19-058) and University of Granada (reference 981/CEIH/2019), respectively. The ethical guidelines of the Declaration of Helsinki were followed.

Relevance for patient care: The scientific relevance is high as the core approach of the present proposal is fully patient-centered. While personalized treatment has been recognized in clinical practice for some time, science is now ready to support these developments and to improve insight into personalized models that influence and maintain chronic symptoms in RMDs. The resulting taxonomy of network models is useful because eventually it will show the distinct models that trigger and maintain pain and fatigue for specific RMDs as well as for outstanding maintaining factors (e.g., obesity, physical inactivity).

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