Focus on Chronic Disease through Different Lenses of Expertise

Towards Implementation of Patient-Focused Decision Support Preventing Disability: The Example of Early Rheumatoid Arthritis

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Örjan Dahlström has studied mathematics and physics, and holds a Master of Science in Electrical Engineering and Applied Physics with a profile in Medical Technology and a special focus on Medical Informatics. He is interested in research methodology, mathematical modelling, knowledge discovery in databases, and analyses of decision making. During his doctoral studies, Örjan has also been teaching in the Psychology, Cognitive Science, Speech and Language Pathology, Human Resource Management and Work Sciences programs at Linköping University, as well as in Disability Science courses. The studies included in this thesis have been performed within the discipline of Disability Research. Örjan is a member of the Swedish Institute for Disability Research (SIDR) and the Section for Cognition Development and Disability at the Department of Behavioural Sciences and Learning.

This thesis is based on methods from Medical Informatics and considers establishment of prognosis in chronic disease. The research context is disability caused by rheumatological disease, and in particular the Swedish TIRA project (acronym for ‘early interventions in rheumatoid arthritis’ in Swedish) which is a multi-centre early arthritis investigation based in the south of Sweden.

This thesis presents a decision tree for establishment of prognosis among patients with recently diagnosed rheumatoid arthritis. An approach is also proposed where present subjective knowledge is taken into regard (‘looking through the lens of expertise’) when mining for patterns in clinical data discovering new knowledge. The levels of fatigue among female and male patients with rheumatoid arthritis are compared, and the relations between fatigue and associated concepts are explored. Some recommendations for implementation of decision support in clinical practice are provided, and a decision support application using different expertise is suggested.

Ideally this thesis will contribute to provide guidance for professionals establishing prognosis in early rheumatoid arthritis so that they can identify patients in need of complex medication as early as possible, and also contribute to an increased use of medical informatics methods in large-scale analyses of clinical and administrative healthcare databases.