

The impact of pain-related fear and hypermobility on physical functioning in adolescents with chronic musculoskeletal pain

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Impact paragraph

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Besides a contribution to scientific knowledge, the results of this dissertation have a broader societal impact. This impact paragraph aims to describe the societal impact of the scientific results to application and implementation in the healthcare, to whom our findings are relevant, and activities for knowledge transfer.

Relevance

Each year, health care costs for patients with chronic musculoskeletal pain (CMP) are rising and many patients with CMP perceived their treatment as inadequate. In many patients with CMP, pain has a disabling impact. In adolescents, CMP may have a negative impact on physical and psychological functioning, interferes with school attendance, performance in social activities, and family engagement, leading to a reduced quality of life. The presence of pain-related fear and generalized joint hypermobility might contribute to understand the complexity and explain the disabling impact of CMP in adolescents. Better understanding of the mechanism may stimulate the development of personalised treatments for hypermobile adolescents with CMP.

Studies in this dissertation showed that pain-related fear is associated with higher levels of disability and lower physical functioning in adolescents with CMP, despite being hypermobile or not. Therefore, early detection of pain-related fear in primary care is important to identify adolescents with musculoskeletal pain who are more at risk for developing disabling CMP. Health care professionals in primary care should thoroughly assess the adolescent's pain problem and needs, make use of biopsychosocial measurements, and be aware of generalized joint hypermobility in order to refer the patient to the right treatment at the right moment. In case of minimal disability in daily life activities with only little influence of psychosocial factors, health care professionals in primary care should use a biopsychosocial approach to get adolescents with CMP active and restore age appropriate functioning despite pain. However, for the adolescents with CMP, despite being hypermobile or not, with a moderate to high level of disability in daily life activities and associated influence of psychosocial factors, multidisciplinary rehabilitation treatment in primary or secondary care are recommended.

The intervention presented in this dissertation, consisted out of a multidisciplinary rehabilitation treatment with physical training and a targeted cognitive-behavioural therapy intervention; exposure in vivo. Results of the study showed a decrease in the level of disability, improvements in physical functioning, and reduced level of pain-related fear and pain intensity in hypermobile adolescents with CMP. It is recommended to further develop tailored multidisciplinary rehabilitation treatments for hypermobile adolescents with CMP incorporating psychological and physical elements when needed.

Physical elements should be added to the multidisciplinary rehabilitation treatment when objective physical measurements show a decrease in physical functioning, such as muscle strength, balance, and aerobic capacity, which interferes with the capability of performing daily life activities. It should be noted that during the assessment of physical functioning, pain experience and psychological factors such as pain-related fear may influence the assessment, and thus the outcome. Adolescents with CMP might decide to stop or perform submaximally, resulting in a lower score. Health care professionals or researchers should be aware of that. Combining different measurements with the same physical elements outcome, for instance measuring muscle strength isokinetic and functional, provides a broader view of the adolescent's physical functioning and differentiates discrepancies in the outcome measures.

Target group

Hypermobile adolescents with CMP might benefit from the multidisciplinary rehabilitation treatment presented in this dissertation. The combination of physical training and exposure in vivo led to a significantly and clinically relevant reduction in the level of disability. In addition, physical functioning, pain-related fear, and pain intensity improved significantly.

Furthermore, the parents and other family members of adolescents with CMP could benefit from the findings of this dissertation. Previous studies showed that parents and families might have a negative influence on the adolescent's pain, pain behaviour, and disability. Parents and families of adolescents with CMP have more social restrictions, less family functioning (such as more conflict or less cohesion), and higher levels of parental stress, anger, depression, and anxiety. Parents also experience the financial burden of CMP. Improvements of the adolescent's functioning benefits the parents and families as well. The negative impact on parental stress, anger, depression, social restriction, and family functioning might decrease.

The studies presented in this dissertation might be of interest for researchers who focus on unravelling the concept of disability in hypermobile adolescents with CMP. Especially, the focus of this dissertation on the impact of pain-related fear on disability in hypermobile adolescents with CMP is a novel topic and is relevant for researchers aiming to improve personalised and tailored treatments for this group of patients. The results of this dissertation contribute to the existing literature of a multidisciplinary and patient-centred approach in hypermobile adolescents with CMP. There is limited evidence for the effect of the often applied more passive approach, such as pain medication, use of mobility aids, and splinting for hands or wrists in restoring age appropriate functioning in hypermobility-related pain. Therefore, an active

biopsychosocial approach in hypermobile adolescents with CMP is recommended to restore age appropriate functioning in society despite having pain.

Furthermore, health care professionals who treat adolescents with CMP in their clinical practice could benefit from this dissertation. Recognizing and treating pain-related fear or recognizing pain-related fear and referral to specialised care adds to delivering the right care at the right moment and reducing the burden of CMP in adolescents and their parents and family. In addition, health care professionals in primary care, for instance a school physician, should be aware of generalized joint hypermobility in the general pain-free population. Generalized joint hypermobility might be a risk factor for developing CMP, especially if these adolescents also experiencing pain-related fear.

Finally, the results presented are of interest for health care insurance companies. Effective and tailored treatments and referral of hypermobile adolescents with CMP to the right place might reduce the financial burden of unnecessary costs, such as medical shopping or overtreatment of inadequate therapies. Therefore, more insight in the cost-effectiveness of the multidisciplinary rehabilitation treatment for hypermobile adolescents with CMP compared to the usual rehabilitation treatment is needed.

Knowledge transfer

This dissertation shows the promising results of multidisciplinary rehabilitation treatment in hypermobile adolescents with CMP consisting of physical training and exposure in vivo. New studies with more rigorous research designs, such as a single-case design or randomized controlled trial, are warranted to further investigate and confirm clinical effectiveness of this multidisciplinary rehabilitation treatment. In case of proven effectiveness, this treatment can be included in Dutch and international guidelines. In addition, in order to raise awareness of the promising results of this new multidisciplinary rehabilitation treatment for hypermobile adolescents with CMP, national and international patient organisations could share this information on their media channels. To disseminate the scientific results of this dissertation, workshops have been organized and presentations on national and international conferences were given for researchers and health care professionals. A course has already been developed (provided at the Adelante Academy) aimed at the training of multidisciplinary rehabilitation teams to use the exposure in vivo protocol in adolescents with CMP. Furthermore, there is an interdisciplinary course for health care professionals in primary care (provided at the Adelante Academy) for using a common biopsychosocial approach in CMP, recognizing pain-related fear, and decide adequately when to refer to specialised care. Health care professionals could also read the book about exposure, which is written by our researchers and clinicians and published in the Dutch language. This book 'Graded Exposure, een cognitief gedragsmatige aanpak van chronische pijn'

describes the application of exposure in both adolescents and adults with different chronic pain conditions. The results from our studies are published in international scientific journals.