COMMENTARY

Commentary on a paper by Holden et al.

Lacey RJ, Campbell P, Michaleff Z. (2018)

Arthritis Research UK Primary Care Centre, Research Institute for Primary Care & Health Sciences, Keele University, Staffordshire, ST5 5BG, UK

In this issue, you will find a paper by Holden et al.: 'Pain patterns during adolescence can be grouped into four pain classes with distinct profiles: A study on a population based cohort of 2953 adolescents'. Eur J Pain, 22, 793–799.

There has been an increasing focus on the epidemiology of musculoskeletal pain in children and adolescents in recent years, with a view to understanding if and how the experience of pain in these populations differs from that in adults and exploring the potential links between child/adolescent pain and adult pain. In their exploratory analysis, Holden et al. (2018) identify four classes, or subgroups, of pain locations in adolescents aged 12–19 years: little or no pain; multisite majority lower extremity pain; multisite majority head and stomach pain; and multisite bodily pain, using latent class analysis. The characteristics of these pain classes (e.g. multisite majority lower extremity pain class appears more related to sports participation, while multisite majority head and stomach pain class includes more somatic pain and is predominately female) suggest potentially different aetiological origins, which may be relevant to the future development of treatment approaches, and potentially the identification of indicators of emerging adult pain phenotypes. One important feature of the study is its school-based, rather than clinical, setting which may be more representative of common musculoskeletal pain presentations in adolescents. Considering the significant number of adolescents who consult health care (e.g. general practitioner) for pain conditions, an improved understanding and classification of adolescent pain presentations could improve clinicians' assessment and subsequent treatment of pain in this age group. One can envisage that, in addition to questions regarding pain severity, frequency, duration, aggravating and easing factors, clinicians could obtain information on pain at other sites including somatic pain (e.g. stomach pain and headache), sports participation, health-related quality of life and medication use. This is important as advice and treatment (including referral to other healthcare professionals, e.g. physiotherapy) are likely to differ for each pain class identified. Increasingly, the medical field is moving towards a person-based treatment approach or 'precision medicine' where treatment is tailored to an individual's characteristics and prognosis. Investigation of whether the pain classes identified differ in terms of other characteristics (e.g. psychological factors, prognosis and response to treatment) may further refine the classification. There is an urgent need to identify clinically relevant prognostic factors and develop an easy-to-use clinical screening tool that can aid the early identification of adolescent patients at risk of persistent pain. The delivery of matched treatments based on an individual's risk has been found to be beneficial in terms of outcomes and cost-effectiveness in adults and may prove to be equally successful in adolescents in terms of reducing iatrogenic treatment effects especially in those with a good prognosis.

Recently, epidemiological musculoskeletal pain research has shifted to focus on the experience of pain over the life course, with childhood and adolescence considered as potential starting points for understanding the origins of adult pain. The paper by Holden et al. (2018) supports previous findings that adolescents report fewer pain sites than adults. The presence of fewer pain sites, however, may explain why pain classes in adolescents appear to be distinguished primarily by the location of pain, supporting the view that number of pain sites becomes more important in classifying subgroups of

pain as people age. New analysis techniques such as longitudinal latent class analysis and latent class growth modelling have shown distinct latent classes, or trajectories, of musculoskeletal pain over time in adults, for example trajectories of high levels of pain and of no or low levels of pain. One additional striking feature of these findings is that, in adults, the trajectories appear to be relatively stable over time with little evidence of change, and this trajectory 'stability' has been shown to exist over many years (Dunn et al., 2013). However, a separate study of adolescents with 3-year follow-up found some musculoskeletal pain trajectory groups similar to those in adults (i.e. relatively stable), but also some trajectories that showed definitive change in pain over time, suggesting the potential development of musculoskeletal pain trajectories at this age (Dunn et al., 2011).

Together with existing evidence, the findings of Holden et al. (2018) emphasize the current and clear need to explore pain, pain type, pain location and pain impact in both children and adolescents. The authors of the paper accept limitations with their cross-sectional findings and that further validation is required. However, this classification of pain in adolescents begins to fill a gap in our existing knowledge on the patterns of musculoskeletal pain in adolescents and would prove an excellent starting point for prospective follow-up to establish which pain classes develop into problematic adult trajectories.

References

Dunn, K.M., Jordan, K.P., Mancl, L., Drangsholt, M.T., Le Resche, L. (2011). Trajectories of pain in adolescents: A prospective cohort study. Pain 152, 66–73.

Dunn, K.M., Campbell, P., Jordan, K.P. (2013). Long-term trajectories of back pain: Cohort study with 7 year follow up. BMJ Open 3, e003838.

Holden, S., Rathleff, M.S., Roos, E.M., Jensen, M.B., Pourbordbari, N., Graven-Nielsen, T. (2018). Pain during adolescence can be grouped into four pain classes with distinct profiles: A study on a cohort of 2953 adolescents. Eur J Pain 22, 793–799.