

Editorial comment

The relationship between pain and perceived stress in a population-based sample of adolescents – Is the relationship gender specific?

Christian Eckhoff^{a,b,*}^a Department of Child and Adolescent Psychiatry, Division of Child and Adolescent Health, University Hospital North Norway, 9038 Tromsø, Norway^b Department of Clinical Medicine, Faculty of Health Sciences, UiT The Arctic University of Norway, 9037 Tromsø, Norway

In the current issue of the *Scandinavian Journal of Pain*, Berit Østerås, Hermundur Sigmundsson and Monika Haga investigates for potential gender differences in the relationship between pain and perceived stress in adolescents, and present interesting findings [1]. Females, both adolescent and adults, report more pain, psychosocial problems and mental health problems than males. On that note some might consider females to be more vulnerable; that stress and adverse life events to a larger extent influence physical complaints in females. However, in spite of higher reports of pain and stress in females, Østerås et al. find pain to be equally related to stress in male and female adolescents.

1. The relationship between pain and stress in adolescents – what do we know?

Adolescence may be a stressful period and several psychosocial difficulties are associated with adolescent physical complaints, including pain [2]. The high prevalence of physical complaints in adolescents is considered to be possible manifestations of psychosocial problems [3]. Studies in adolescents have shown a strong relationship between pain and mental health problems, primarily anxiety and depressive symptoms [2]. Well known risk factors of mental health disorders, as stress and adverse life events [4], are less studied factors in relation to pain. However, Østerås et al. recently published findings that showed a clear association between adolescent pain and perceived stress [5], supporting previous studies showing a relationship between pain and stress in adolescents [6–9].

2. Stress in youth – a turn for the worse?

Adolescence has always been a challenging period with changes and developments on many levels. Through media exposure we

get the impression that adolescents today experience high levels of pressure to succeed through social, academic and peer related stress [10,11]. Whether this perceived trend is due to a more challenging adolescent period than before is uncertain. Growing up in other historical periods has surely also been difficult. However, the Norwegian HEMIL-report provides some support to this notion on a short term scale, showing a 73% increase in adolescent reports of substantial school-related stress from 1997 to 2012 [12]. A Finnish adolescent study show increased pain reports in the last decades [13]. One can question if this is related to an increase in adolescent stress, due to the current evidence of the relationship between adolescent pain and stress [1,5–9].

Never the less, the perceived stress is related to pain and other physical complaints [1,5–11], which in turn may lead to contact with health services. These adolescents can range from highly capable youth struggling with daily stressors and expectations, to youth struggling with serious mental health disorders.

3. The relationship between pain and perceived stress in adolescents is not gender specific

Østerås et al. found pain complaints and perceived stress to be common in both genders, but females are significantly more troubled [1]. This is supportive of known knowledge. In total, 8.5% of the adolescents reported multisite pain (≥ 3 pain sites), and 21.7% were moderately to severely stressed, defined by the Perceived stress questionnaire (PSQ ≥ 0.45) [1].

The main finding done by Østerås et al. is that the relationship between pain and stress is equally strong in both males and females (Fig. 1). That stress is an important factor related to pain in both genders, alongside adverse life events and mental health problems is supported by a previous study [6]. An improvement to previous studies examining the relationship between pain and stress in adolescents [6–9], is the use of a validated measure of stress, the Perceived stress questionnaire [1,5]. Another strength of the study is the use of different pain measurements, including pain sites, pain duration and pain intensity. Perceived stress was significantly associated with all three aspects of pain, in both genders (Fig. 1).

DOI of refers to article: <http://dx.doi.org/10.1016/j.sjpain.2016.05.038>.

* Corresponding author at: Department of Child and Adolescent Psychiatry, Division of Child and Adolescent Health, University Hospital North Norway, 9038 Tromsø, Norway. Tel.: +47 777 55799.

E-mail address: Christian.Eckhoff@unn.no

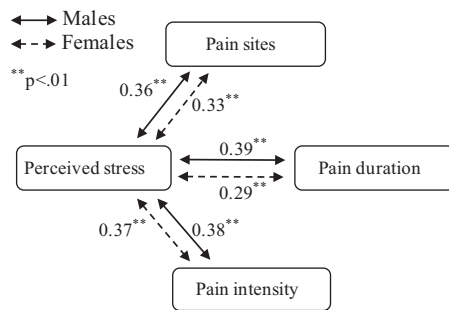


Fig. 1. The correlation between perceived stress and pain in male and female adolescents (figure based on results presented by Østerås et al. [1]).

In recent years there has been an increased focus on multi-site or widespread pain, which is more strongly associated with psychosocial and mental health problems than single-site pain is [6,14]. Østerås et al. present similar findings showing an increasing degree of stress in relation to the increasing number of adolescent pain sites [1]. Multiple pains might be an easier clinical marker of psychosocial problems than the subjective degree of pain.

The cross-sectional design of the study does not allow the authors to explore any causal direction between perceived stress and pain. There is a lack of longitudinal studies examining for a relationship between daily stressors and pain, which should be examined further.

4. Conclusion and implications

Expectations and pressure to succeed with subsequent stress seems to increase in Scandinavian youth. The most important finding in the current study is that pain complaints are equally related to perceived stress in male and female adolescent. The study adds to the evidence of a relationship between stress and pain, contributing to the multifactorial understanding of pain. Future research should seek to examine for a temporal relationship between stress and pain in adolescents. Health practitioners should be attentive to psychosocial problems in both male and female adolescents troubled with multiple or recurrent pains.

Conflict of interest

None declared.

References

- [1] Østerås B, Sigmundsson H, Haga M. Pain is prevalent among adolescents and equally related to stress across genders. *Scand J Pain* 2016;12:100–7.
- [2] King S, Chambers CT, Huguette A, MacNevin RC, McGrath PJ, Parker L, MacDonald AJ. The epidemiology of chronic pain in children and adolescents revisited: a systematic review. *Pain* 2011;152:2729–38. <http://dx.doi.org/10.1016/j.pain.2011.07.016>.
- [3] Garralda ME. The interface between physical and mental health problems and medical help seeking in children and adolescents: a research perspective. *Child Adolesc Ment Health* 2004;9:146–55.
- [4] Patel V, Flisher AJ, Hetrick S, McGorry P. Mental health of young people: a global public-health challenge. *Lancet* 2007;369:1302–13. [http://dx.doi.org/10.1016/S0140-6736\(07\)60368-7](http://dx.doi.org/10.1016/S0140-6736(07)60368-7).
- [5] Østerås B, Sigmundsson H, Haga M. Perceived stress and musculoskeletal pain are prevalent and significantly associated in adolescents: an epidemiological cross-sectional study. *BMC Public Health* 2015;15:1081. <http://dx.doi.org/10.1186/s12889-015-2414-x>.
- [6] Eckhoff C, Kvernmo S. Musculoskeletal pain in Arctic indigenous and non-indigenous adolescents, prevalence and associations with psychosocial factors: a population-based study. *BMC Public Health* 2014;14:617. <http://dx.doi.org/10.1186/1471-2458-14-617>.
- [7] Alfven G, Östberg V, Hjern A. Stressor, perceived stress and recurrent pain in Swedish schoolchildren. *J Psychosom Res* 2008;65:381–7.
- [8] Hjern A, Alfven G, Östberg V. School stressors, psychological complaints and psychosomatic pain. *Acta Paediatr* 2008;97:112–7. <http://dx.doi.org/10.1111/j.1651-2227.2007.00585.x>.
- [9] Diepenmaat ACM, van der Wal MF, de Vet HCW, Hirasings RA. Neck/shoulder, low back, and arm pain in relation to computer use, physical activity, stress, and depression among Dutch adolescents. *Pediatrics* 2006;117:412–6. <http://dx.doi.org/10.1542/peds.2004-2766>.
- [10] Knapstad ML. De sykt flinke (Norwegian newspaper article – “The Sickly Clever”). *Aftenposten*; 2013.
- [11] Sparre-Enger H. Smertebarna (Norwegian newspaper article–“The Pain Children”). *A-Magasinet* #6; 2016.
- [12] Samdal O, Bye HH, Torsheim T, Birkeland MS, Diseth AR, Røssing A, Fismen A-S, Haug E, Leversen I, Wold B. Sosial ulikhet i helse og læring blant barn og unge [Social inequality in health and education among children and adolescents]; 2012. The HEMIL-report.
- [13] Ståhl MK, El-Metwally A, Rimpelä AH. Time trends in single versus concomitant neck and back pain in Finnish adolescents: results from national cross-sectional surveys from 1991 to 2011. *BMC Musculoskelet Disord* 2014;15:1–7.
- [14] Skrove M, Romundstad P, Indredavik MS. Chronic multisite pain in adolescent girls and boys with emotional and behavioral problems: the Young-HUNT study. *Eur Child Adolesc Psychiatry* 2015;24:503–15. <http://dx.doi.org/10.1007/s00787-014-0601-4>.