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The prevalence, risk factors, prognosis and treatment for back pain in children and adolescents: An overview of systematic reviews

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A B S T R A C T

Emerging data suggest that back pain in adolescents is responsible for a substantial disability burden and consumes considerable healthcare services. Of further concern is the fact that back pain during this period of life may have health implications in adulthood. Given this, understanding the epidemiology and clinical evidence base relevant to clinicians and researchers in the field of musculoskeletal health is crucial. This chapter provides an overview and synthesis of systematic reviews that address important questions related to back pain in children and adolescents:

- What is the prevalence of back pain in children and adolescents?
- What are the risk factors?
- What is the clinical course and what are the prognostic factors?
- Which are the most effective preventative interventions and clinical treatments?

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Introduction

While the enormous disability burden of back pain in adults is well documented [1,2], the consequences of the condition in children are not so well acknowledged. Yet there is a good reason for concern about the effect of back pain in children and adolescents worldwide. In 2015, back and neck pain ranks 9th in years lived with disability in 10- to 14-year-olds and 4th in 15- to 19-year-olds (GBD data viz), in the latter case ahead of much higher high profile 'non-communicable' conditions such as cancer and anxiety disorders. In contrast to a perception that back pain in children is generally transient and trivial in terms of impact on individuals, evidence suggests that prevalence is high [3], and a substantial minority of children who report back pain are significantly impaired by their pain. A large number of children seek care for their back pain [4], miss school or work [5], or miss out on sport and physical activities [6].

Unsurprisingly, the high prevalence and care-seeking translate into a substantial financial burden for society. A study in the US estimated the annual cost of chronic pain in adolescents aged 10–17 years, of which musculoskeletal pain comprised the largest proportion, was \$19.5 billion [7]. A large survey in Germany estimated a minimum figure for direct costs for the treatment of people under the age of 25 with back disorders of €100 million per year [8]. Although data documenting the costs associated with children's back pain are sparse, they appear to be substantial, meaning investigation into prevention and treatment is worthwhile from an economic perspective.

Of further concern are the links between back pain and lifestyle-related risk factors, including smoking [9], alcohol and substance use [10] and overweight [11]. The question of whether the relationships between back pain and these indicators of poor health are causal in one direction or in another direction has not been answered, but the links are of concern nonetheless. This evidence suggests that back pain may play a part in a picture of overall poor health and adverse health risk in adolescents. The concern is that just as health-related behaviours track from adolescence into adulthood [12], so will the experience of back pain and its associated disability burden.

Studies that examine the nature of back pain across the life-course point to the importance of understanding the condition as it presents in childhood. Epidemiological studies conducted in adult populations characterise back pain as a recurrent condition [13], and the most consistent risk factor for an episode of back pain is having had a previous episode [14]. In the few longer-term cohort studies conducted, the presence of long-term back pain in adolescents appears to increase the risk of chronic pain in adulthood [15,16]. On the basis of these considerations, it follows that exploring back pain at the time of its earliest presentation may be of value.

The conception of back pain in children and adolescents has undergone a large change on the past 15–20 years. Report of back pain in childhood was previously considered rare and a sign of serious underlying pathology, in fact several clinical practice guidelines include 'age under 20 years' as a red flag for back pain assessment [17]. However, more recent studies have indicated that the condition is common, and it is usually not possible to diagnose a specific patho-anatomical cause for the pain [18]. While popular clinical and media explanations portray back pain as a consequence of biomechanical or ergonomic influences, implicating backpacks, computer/device use and posture, research increasingly identifies a range of psychological and social risk factors as well [19]. To further advance the understanding of paediatric back pain, it is clear that a broader view of the influencing factors and management approaches is required. Drawing on paradigms such as the biopsychosocial model used in the adult field to frame understanding of paediatric back pain, particularly chronic pain, may be a useful initial step [20].

The aim of this article was to present a 'state-of-the-art' for back pain research in children, as represented by systematic reviews relevant to various aspects of the condition. The findings of published systematic reviews that addressed the questions below were synthesised to summarise the current understanding and identify gaps in knowledge.

- What is the prevalence of back pain in children?
- What are the risk factors?
- What is the clinical course, and what are the prognostic factors?
- Which are the most effective preventative interventions and clinical treatments?

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