

## Back Pain in Children and Adolescents

### 1. All children with new-onset back pain and especially children below the age of 10 years need a workup to rule out a serious medical condition

Infections, solid tumors, physical trauma, and congenital spinal malformations may cause back pain. An age under 10 years is a risk factor for back pain due to an underlying pathophysiology. The following red flags should be sought in children with newly diagnosed back pain: fever, pain in other locations, back pain that starts after physical trauma or after sports, radiculopathic pain, co-existent chronic conditions, or a history of glucocorticoid treatment. Neurological signs including muscular weakness, paresis, somatosensory abnormalities (dysesthesia, hypesthesia or allodynia) as well as anal sphincter dysfunction should be ruled out. Findings of local swelling, detectable lymph nodes, structural changes of the spine, hypermobility, local inflammation, or tenderness should be pursued, and blood pressure should be measured. It is crucial not to miss underlying conditions in children with back pain, especially in younger children. [1, 2]

### 2. 1 in 5 school-age children experience back pain.

A large population study that followed children through adolescence in Canada found that across 12–19 years of age, 1 in 5 youth experienced low back pain that occurred weekly or more frequently with girls experiencing more frequent back pain over the course of adolescence than boys. Similarly, a large population study of school children in England aged 11-14 years of age found that 1 in 4 children experienced back pain in the prior month. The vast majority of youth with back pain in both of these studies reported experiencing pain-related functional limitations. [3, 4]

### 3. Low back pain appears to increase with age in children and adolescents.

Research has shown that prevalence of low back pain increases with age. Further, rates of low back pain have increased over time, with more recent studies showing highest prevalence rates, suggesting pediatric low back pain problems may be increasing. Taken together, this points to a potential important role of prevention and early detection efforts in childhood to reduce the lifetime burden of chronic low back pain. [5].

### 4. 1 in 5 to 6 children and adolescents with low back pain seeks medical care.

Epidemiological studies from different countries (Finland, Iran, Nigeria, Portugal) show that between 12% to 20% of children and adolescents with low back pain have sought evaluation by a physician. Physician consultation greatly increases from the age of 13 to 15 years onwards. [6-10]

### 5. Heavy school bags do not cause chronic low back pain

A causal correlation between wearing a heavy school bag and the development of low back pain is often discussed. However, empirically the association between schoolbag weight, design and carriage method and the risk of new-onset low back pain in school children and adolescents has not been confirmed. [2, 11]

## 6. Moderate physical activity is a protective factor.

Moderate and regular endurance sports such as running, swimming or cycling, appear to be a protective factor for non-specific back pain in adolescence. In contrast, high levels of physical activity in athletes, technical sports, and especially competitive sports represent a risk factor for the occurrence of non-specific back pain in adolescence. [1, 12, 13]

## 7. Psychosocial factors can predict chronic back pain trajectories.

High levels of anxiety and depression are predictive of recurrent back pain trajectories during adolescence. Specifically, youth with greater anxiety and depression are more likely to develop persistent pain with increasing pain intensity during adolescence. Studies are needed to examine psychological interventions for youth with chronic and recurrent back pain. [3, 14, 15]

## 8. Up to a half of adolescents undergoing spinal fusion surgery experience chronic back pain after surgery

Spinal fusion surgeries, performed for spinal deformities like scoliosis, are amongst the most frequently performed major musculoskeletal surgeries in childhood and adolescence. Most children (about 80%) experience high intensity acute pain at home after spine surgery, which places them at risk for chronic postsurgical pain. Data shows about 20% develop chronic postsurgical pain, a condition defined by chronic pain which impacts health-related quality of life after surgery. Higher psychosocial distress in youth undergoing spinal fusion surgery, and their parents, is associated with higher acute and chronic pain. Psychosocial interventions targeting these risk factors may interrupt a negative trajectory of continued pain. [16, 17]

## 9. Exercise interventions improve low back pain in children and adolescents.

A systematic review and meta-analysis evaluating effectiveness of non-invasive interventions to treat low back pain found that supervised exercise programs improved pain intensity experienced in the prior month by about 3 points on a 0-10 numeric rating scale, compared to no treatment. However, included studies had high risk of bias indicating that while these results are promising, further pediatric research is needed. [14, 18]

## 10. Further research is needed to understand prognosis of back pain during childhood and adolescence.

A review of systematic reviews concluded that further pediatric research is needed to understand the prognosis of back pain in children and adolescents. In particular, research is needed to understand implications for pediatric chronic low back pain into adulthood. [13]

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