

## REVIEW ARTICLE

# Management of Chronic Pain in Children

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## ABSTRACT

Chronic pain is a common problem not only in adults but also in children. Though there are ample data regarding acute pain and its management in the pediatric age group, information regarding chronic pain in the pediatric population is seriously lacking. Prevalence of chronic pain in children and adolescents varies according to the study and is between 15 and 25%. Chronic pain often interferes with the child's participation in normal physical, academic, and social activities. Caregivers of children and adolescents with chronic pain suffer a great sense of burden, which affects their emotional, social, and family functioning. The problem is also exacerbated by the additional financial burden secondary to increased physician consultation and medication use. A better understanding of pain in children is needed in order to gain insight into its etiology. Management of chronic pain in this age group requires a multidisciplinary approach as in the adult population. While chronic pain is not well understood, there is emerging evidence that young people and their parents can recover from chronic disability, dependency, and distress and return to a normal life.

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## INTRODUCTION

Chronic pain in children and adolescents has emerged as an important public health problem.<sup>1</sup> Data regarding the incidence and prevalence of chronic pain in this population are very less. According to some studies, the prevalence of chronic pain in children ranges from 15 to 25%,<sup>2,3</sup> but according to a German study, the prevalence is 83%. This study also revealed that up to 50% of these chronic pain children had pain-related sequelae like sleep disturbances, eating problems, school absenteeism, and inability to pursue their hobbies or meet friends. Chronic pain may also cause problems in school through poor concentration, incomplete homework, etc.<sup>4</sup>

## COMMON CHRONIC PAIN SYNDROMES IN CHILDREN

- Headaches — headaches are the most common cause of chronic pain syndrome in children and adolescents. The prevalence is as high as 75% by the age of 15 years. Majority of them are nonspecific, unclassified headaches, 7.5% are migraine, and 18.5% are tension-type headaches.<sup>1,5</sup>
- Chronic abdominal pain — prevalence of chronic abdominal pain is also as high as headache (75%), with up to 21% being severe enough to restrict activities.<sup>1,5</sup>
- Musculoskeletal pain — this includes joint pain, bone pain, and muscle pain. This can be rheumatologic or nonrheumatologic. The prevalence of juvenile rheumatoid arthritis has increased over the recent past. Nonrheumatologic musculoskeletal pain includes limb pain, knee pain, and back pain.
- Juvenile fibromyalgia syndrome — the prevalence of fibromyalgia syndrome varies from 1.25 to 7% with female predominance.<sup>5</sup>
- Temporomandibular disorder — the prevalence is 7% and is associated with bruxism, tooth grinding, and tooth positioning.
- Complex regional pain syndrome (CRPS) — there are few studies reporting the prevalence of CRPS in children and adolescents. Ninety percent of the children were females with mostly affected lower limbs after a minor trauma.
- Disease- or treatment-related pain — sickle cell disease, cystic fibrosis, and phantom limb pain.
- Cancer pain.

## IMPACT OF CHRONIC PERSISTENT PAIN ON CHILDREN AND THEIR FAMILIES

Chronic pain has a significant negative impact on children and their families.<sup>6</sup> As in adults, the interaction between the biological processes, psychological factors, and social and environmental factors will influence the overall experience and impact of chronic pain in children and adolescents.<sup>7</sup> Highest pain frequency occurs during dinner and bedtime and is more common in girl children.<sup>6</sup> Regardless of the etiology, chronic pain causes significant disturbance in the child's everyday activities.

One of the major consequences of chronic pain is school absenteeism. Almost 50% of the children skip

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school due to severe pain, and this leads to poor academic performance and poor peer relationships. These children become isolated and hence, are poorly accepted by their healthy counterparts.

Chronic pain also has impact on sleep patterns. Many children have difficulty in initiating sleep, frequently get up from their sleep, and have daytime somnolence.

Chronic persistent pain also has significant effect on emotional component. Many children suffer from anxiety and stress and are less cheerful.

Chronic pain also affects the parents of suffering children. It leads to significant financial burden for the family due to hospitalization, medication, and treatment costs. Indirect costs include parental off work and transportation costs. Chronic pain also causes parental anxiety, stress, and depression. Parents of chronic pain children also restrict themselves from social gathering and become isolated.<sup>8</sup>

## EVALUATION OF CHRONIC PAIN CONDITION IN PEDIATRICS

Proper assessment of the pain condition is essential to formulate a treatment plan by which the pain can be effectively reduced and function can be improved.

Initial assessment includes history regarding the painful condition similar to adults with respect to duration, intensity, frequency, site, radiation, referral patterns, aggravating and relieving factors, and quality of pain.

Child's medical history may give a lot of information about the etiology. Exposure to painful conditions early in life, such as multiple surgeries, painful procedures, and stormy neonatal course, will change the pain perception in children.<sup>7</sup>

Another important element in the history is problems in the family. Headaches were noted to be more common in families with frequent quarrelling among the parents. Similarly, other adverse factors like parental separation and parental death can have significant effects on children and can lead to widespread pain syndromes.

Child's school conditions also have to be explored, including academic performances, other recreational activities, and relationship with peers.

Physical examination of the child with pain includes thorough assessment of the gait and posture, examination of the painful region, and also neurologic examination. Child's growth parameters have to be measured as the chronic pain hampers the growth of the child. There is an association between chronic pain and postural orthostatic tachycardia syndrome and therefore, heart rate should be obtained both supine and standing. Specific discussion of the examination of the back, abdomen, and joints is beyond the scope of this article.

Psychological assessment has to be made and parents have to be interviewed for additional information.

## TREATMENT

Unlike in adults, medications are the minor component in the pediatric chronic pain management. It is always advised to use a complex, multifactorial, multidisciplinary approach in the treatment of chronic pediatric pain patients. Goals in the treatment of chronic pain are primarily focused on functionality. Unlike the treatment of acute pain, the goal is not to completely eradicate the pain, as for most of our patients that may not be realistic and will only lead to failure and disappointment. Instead, the focus is moved away from the pain. The ultimate goal is to make them to return to school, make them fit to involve in social activities, and back to leading a normal functional life.<sup>9,10</sup>

Psychosocial factors play an important role and should be addressed before starting patients on pharmacotherapy, since it is known that psychosocial factors contribute largely to pediatric patients' perception of pain. In times of stress (such as parental separation, family arguments, physical or sexual abuse), pain tends to aggravate. The goal is to teach them how to cope with pain and what to do when they have a pain flare.

Almost all the patients should be referred to physical and/or occupational therapy. Regaining function and desensitization are large components of returning to a normal life. Patients will benefit from the many positive aspects of exercise, including improved fitness, reduced pain and fatigue, and release of  $\beta$ -endorphins. There is increasing evidence that incorporation of yoga into the treatment plan will increase strength and flexibility as well as help the patients to learn breathing and relaxation techniques.

Although there are few studies, the evidence is strong for cognitive behavioral therapy, biofeedback, guided imagery, self-hypnosis, and other coping techniques. Cognitive behavioral therapy changes the emotional and physical response to pain.<sup>11</sup> These therapies can be delivered with technological devices, such as the internet, computer-based programs, smartphone applications, or via the telephone.<sup>12</sup> Teaching patients and families these coping techniques is of paramount importance. There is also a role for psychiatry in the treatment of mood or other psychiatric disorders that may be affecting the child, commonly anxiety and/or depression.

Pharmacologic therapy has a minor role in the treatment of pediatric patients' chronic pain. Pharmacologic treatments are used, based usually on data extrapolated from adults. The evidence for effectiveness is limited.<sup>2</sup> A systematic review of controlled trials of medications for headache and migraine reported efficacy for

acetaminophen, ibuprofen, and sumatriptan.<sup>7</sup> Similarly, many of the open label studies report the efficacy of citalopram in the treatment of recurrent abdominal pain in children. Gabapentin and pregabalin are used in the treatment of neuropathic pain. Usually, it is advised to start with the lowest possible dose. Similarly, nortriptyline is the tricyclic drug of choice in children where the starting dose is 5 to 10 mg and gradually increased depending on the response with close monitoring of the side effects. Nonsteroidal anti-inflammatory drugs, which are widely used in acute pain management in children, are also used in the chronic inflammatory disorders. Cancer pain is managed according to the World Health Organization ladder.

At present, evidence for the role of interventions like nerve blocks (sympathetic and somatic), epidural steroids, and spinal cord stimulation for the treatment of chronic pain is lacking and should not be used as first-line treatment. However, they are helpful in a small subset of patients when the other therapies have exhausted.<sup>13</sup>

Many children with chronic pain, like adults, have disturbed sleep patterns. Pain syndromes lead to decreased sleep latency, shortened total sleep time, decreased sleep efficiency, and excessive nighttime movement. The importance of restorative sleep and good sleep hygiene habits cannot be overemphasized. Simple actions, such as eliminating caffeine from the diet and creating a healthy sleep environment, as well as regular exercise can make a significant improvement in sleep.

## CONCLUSION

Chronic pain in children is a complex and still an unexplored area. Data regarding the incidence and prevalence are still lacking. Chronic pain in children has become an important public health problem with significant impact on the child and family. Existing evidence reports that there are many etiologies and triggering factors for the onset and maintenance of chronic pain. Multimodal and multidisciplinary approach is the most appropriate way to manage chronic pain in children. Pharmacotherapy and interventions have a very minor role and should be used judiciously.

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