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Commentary

The school functioning of children with chronic and recurrent pain

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Consistent with a biopsychosocial framework for understanding children's pain, it is important to recognize that many areas in a child's life may be affected by chronic or recurrent pain. Attendance at school typically occupies a large number of a child's waking hours. It is an environment where social relationships develop and important learning occurs. This article reviews the literature on various aspects of school functioning and common areas of functional impairment of children and adolescents with chronic or recurrent pain conditions, including school attendance and participation, social functioning, and academic performance. Factors within the school's physical environment that may impact on the functioning of students with pain conditions are also outlined.

School attendance and participation

Frequent school absences have been reported in children with migraine (Stang & Osterhaus, 1993), abdominal pain (Walker et al., 1998), musculoskeletal pain (Mikkelsen et al., 1997), and juvenile rheumatoid arthritis (Sturge et al., 1997). In a large-scale study (n=749 school children), about half of the children with abdominal pain, 43% with headache, and 19% with back pain reported missing school because of pain (Roth-Isigkeit et al., 2005). Although it is not uncommon for researchers to use days absent from school as a surrogate measure for functional impairment, it is only a crude measure and one which is often difficult to interpret. More

information is needed regarding a child's level of participation and engagement in school activities if he/she is present at school.

In view of the fact that sport is recognized to contribute not only to children's fitness and coordination, but also to their sense of team work and self-esteem, most schools allocate regular timeslots for sporting activities. However, about one-fifth of grade 7 students within a community sample (Lockhart et al., 2004) and 71% of children in a pain clinic sample (Chalkiadis, 2001) reported being unable to take part in sports due to pain. Moreover, time spent engaged in physical activities has been found to be inversely related to the duration of low back pain in secondary school children (Sjolie, 2004).

School reintegration following long absences due to pain may be stressful for many students. Students may have concerns about catching up on school work, feeling out of touch with peers, looking different (e.g. limping), being teased by peers, and managing practical issues associated with attending school, such as walking between classrooms and carrying school bags. These concerns may be compounded in individuals who have a heightened sensitivity to minor physical sensations, becoming fearful that minor sensations may be indicative of an impending crisis (Walker, 2004). The American Pain Society Position Statement on Pediatric Chronic Pain (2001) recommended the education of school staff to

facilitate the reintegration of children with chronic pain into the classroom. One of the few studies in this area was a randomized controlled trial that evaluated a school intervention program for sickle cell anemia, involving the education of teachers and peers (Koontz et al., 2004). Patients assigned to the school intervention condition had lower absentee rates than those not in the school intervention condition. The authors of the program speculated that parents may have been less likely to keep their child at home for minor physical complaints knowing that teachers could effectively manage their child's condition (Koontz et al., 2004).

To ensure satisfactory reintegration, the complex interaction of multiple potential impediments must be managed. A significant proportion of children with chronic pain have increased psychopathology, heightened parental anger and hostility, and family dysfunction (Liakopoulou-Kairis et al., 2002). Anger, poor communication and problem-solving skills in these families may threaten a collaborative relationship with school staff. Combined with a limited understanding of the biopsychosocial pain model, psychopathology may be misinterpreted by school staff as indifference, overprotection or blaming by the parent, or malingering by the child. Also, since adverse school experiences (e.g. exam failure and bullying) are associated with increased recurrent pain levels (Boey & Goh, 2001), reintegration should be carefully graded and supported.

School functioning

School is an important context for social interactions and the development of social identity. Social functioning encompasses factors such as peer relations, social competence, and social-emotional adjustment (Adams et al., 2002). Frequent absences from school, and a lack of involvement in school activities, may limit opportunities for children to establish friendships and may result in increased passivity and the development of feelings of inferiority (Vitulano, 2003). With depression rates being significantly higher among adolescents with recurrent pain symptoms than those without pain (Härmä et al., 2002), social functioning may be further compromised due to low mood. Parents of children with recurrent abdominal pain have been found to

rate their children as having lower levels of social competence than the parents of healthy controls (Walker et al., 1998). Within a sample of children with a chronic illness, those with pain were found to engage in less social activities and were more anxious in social situations than those with no pain or only occasional pain episodes (Meijer et al., 2000).

Attention also needs to be given to the social consequences of a child's pain at school, both from teachers and peers. Children who have low perceived self-worth and low perceived academic competence may be most likely to adopt a sick role which may offer a legitimate alternative to roles at which they perceived themselves as failing (Walker et al., 2002). Hence, interventions that build up a child's self-worth and perceived academic competence may have beneficial effects on their pain. Moreover, teachers may benefit from guidance in how to reinforce healthy behaviors and achievements with praise and attention, and reminders not to reward pain behaviors with privileges or special attention.

Academic performance

Children with chronic or recurrent pain conditions may experience problems academically. The parents of children with recurrent abdominal pain have been found to rate their children as having lower levels of academic competence than the parents of healthy children (Walker et al., 1998). Another study found that although the presence of recurrent abdominal pain was associated with lower levels of academic achievement, this relationship was weakened when other factors such as stress were taken into account, suggesting that stress may be a common factor predisposing individuals to both abdominal pain and poorer academic functioning (Boey et al., 2003).

A number of factors in addition to missing school may impact on the academic functioning of children with chronic or recurrent pain problems. In a survey of pain clinic patients (n=207), as many as 71% of children reported experiencing almost daily sleep disruption (Chalkiadis, 2001). Sleep disturbance in children has been found to be associated with impairments in selective attention, concentration, cognition and memory (Dahl, 1996; Randazzo et al., 1998), not to mention impairments

in behavioral and social functioning (Mindell et al., 1999). It is also not uncommon for children to report that some pain medications cause drowsiness and impaired concentration, making it more difficult for them to function in the classroom.

Acute pain serves as a useful warning signal that interrupts an individual, prompting him or her to avoid further tissue damage and to facilitate healing. Although chronic pain is thought to occur beyond the expected time of tissue healing, and hence no longer serves as a useful warning signal, chronic pain has similar interruptive properties (Eccleston & Crombez, 1999), leaving fewer attentional resources for other cognitive tasks. Studies with adults with chronic pain (without neurological impairment or traumatic brain injury) have found compromised attentional capacity, processing speed, and psychomotor speed (for a review, see Hart et al., 2000). Although more research is needed specifically with pediatric samples, similar findings are likely. Such deficits may impact on a child's ability to engage in academic activities to their potential, particularly classroom activities that involve some component of time pressure.

The physical school environment

Numerous aspects of the school environment may hinder the effective functioning of children with pain. A study conducted in the United States found that less than one-fifth of sixth graders ($n=74$) had acceptable chair/desk combinations available to them in the classroom (Parcells et al., 1999). With increasing computer usage by children and adolescents, both at school and at home, it is also important to recognize that associations with musculoskeletal discomfort have been found for both extended computer usage and poorly adjusted workstations (Jacobs & Baker, 2002).

Many students carry heavy school bags, with over one-third having bags that weigh more than 15% of their own body weight (Limon et al., 2004). School bag weight, as a percentage of body weight, has been found to be a significant predictor of pain, when controlling for age, socioeconomic status, walking to and from school, and method of wear (Siambanes et al., 2004). However other studies have not found the relative weight of school bags to

be associated with neck, shoulder or back complaints (van Gent et al., 2003).

In considering the school environment, it is important to recognize that many schools have student lavatories (bathrooms) that are poorly maintained and may present particular issues for children with abdominal pain or gastrointestinal disorders, who may need to make frequent or urgent use of the toilet (Walker, 2004). As noted by Walker (2004), there may be a lack of privacy, with doors often broken or unable to be locked. Children may be fearful that others will know they are defecating by the sound or smell. Moreover, they may fear being teased due to their frequent visits to the lavatories. A lack of toilet paper and poor sanitation may also be of concern to the child. These issues may result in students avoiding the use of school toilets, which may exacerbate their abdominal pain. Anxiety-related issues may need to be addressed and special arrangements providing the child with greater privacy considered (Walker, 2004).

Conclusion

Children who have chronic or recurrent pain conditions have been found to experience difficulties in a number of areas of school functioning, including attendance and participation, social functioning and academic performance. The functioning of students with pain conditions may be impeded by factors within the school's physical environment. Further research is needed to evaluate possible school-based intervention programs designed to educate teachers and peers on chronic pain conditions and how best to respond to pain behaviors. Consideration should also be given to methods for the effective reintegration of students returning to school following lengthy absences.

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