

Pediatric Pain Letter

Abstracts and Commentaries on Pain in Infants, Children, and Adolescents

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The “growing pains” of pediatric pain research

As we were putting this issue together, it struck me that the two commentaries each addressed an area of pain where the profound lack of scientific rigour has impeded significant progress. Our ability as clinicians to effectively assess and treat the common problem of growing pains and sort out the very important issue of culture are severely hampered by the lack of well designed research. As a result, we often fall back on our stereotypes. Surely, our patients deserve better.

Perhaps because these issues appear to lack clinical urgency, it is easier to “do the best with what we have”, than to admit that our practice may be hampered by less than adequate empirical evidence. As Belinda Goodenough’s commentary suggests, growing pains are likely as benign as growing up, but still come with all the discomfort, disruption, and feelings of anxiety that any other poorly understood pain syndrome brings. Addressing cultural similarities and differences in children’s pain experiences may not appear to directly benefit the child with pain. However, these two areas are good examples where the clinician and scientist must be reminded that any time when a child’s pain can be eased, or at least better understood, we have made steps toward better practice.

A

bstracts

Growing Pains

Naish, J. M. & Apley, J. (1951). "Growing pains": A clinical study of non-arthritic limb pains in children. *Archives of Disease in Childhood*, 26, 134-140.

Objective. To determine the prevalence of limb pains among school age children and to examine the psychosocial and medical correlates of various persistent, non-arthritic limb pains.

Design. Survey, with case-control follow-up.

Setting. A number of schools located in Bristol, UK.

Participants. 721 children from various school clinics and their mothers were interviewed about the occurrence of limb pains, defined as pain of at least 3 months' duration, not located primarily in the joints, and that interferes with regular activities. 30 children met diagnostic criteria and additional information about the family's and child's pain history, demographic variables (e.g., father's occupation), and the child's behaviour at home and at school was also obtained. Data from 6 of these children were insufficient and analyses were performed on data from the remaining 24 children. The next child examined without limb pains following a child identified with limb pains was selected as a control. An additional 54 children, who had been referred to a hospital clinic for limb pains, and their mothers were also interviewed. The authors noted that both groups of children with pain were found to be comparable and no significant differences were identified between their personal or family histories or physical or mental factors.

Main Outcome Measures. Questionnaires were sent to all parents between the first and third year after the initial interview regarding their child's current pain status. 53 completed questionnaires were returned.

Results. The incidence of limb pains in the school sample was 4.2% (30/721 children), with no difference in incidence between boys and girls. The highest incidence of limb pains was observed between 8 and 12 years of age, although this was not tested statistically. Compared to the family history of the control participants, those reporting limb pains had family histories with a greater incidence of rheumatic diseases. Children who reported mostly nocturnal limb pains showed family histories of mostly nocturnal pain problems. Children who experienced limb pain during the day had relatives with diurnal pain

conditions. The incidence of "emotional instability" in limb pain versus control children was 25% (6/24) versus 13% (4/30), respectively. Of the 53 follow-up questionnaires received, 19 children were reported to be free from limb pains.

Conclusions. Limb pains occurred predominantly during periods of slow growth (between 8 and 12 years) and because there was a high rate of co-occurrence of pain in adult relatives, the authors suggested that the term "growing pains" was inaccurate. Suggestions for limb pain subtypes were provided (i.e., 1) ill-defined pains; 2) diurnal fatigue pains and; 3) paroxysmal nocturnal pains).

Baxter, M. P. & Dulberg, C. (1988). "Growing Pains" in childhood - A proposal for treatment. *Journal of Pediatric Orthopaedics*, 8, 402-406.

Objective. To determine the efficacy of a muscle stretching regimen for children who have been diagnosed with growing pains.

Design. Prospective, randomized, single-blind controlled study.

Setting. Children's hospital.

Participants. 54 participants were recruited from the practices of 4 community physicians. Of these, 36 children (20 females) between 5 and 14 years old met the Naish and Apley (1951) diagnostic criteria for "growing pain syndrome" (i.e., intermittent pain late in the day or that awakens the child at night, pain for at least 3 months, not specifically in the joints, normal physical exam and laboratory tests, and of sufficient severity that daily activities are interrupted). 34 of the initial 36 children completed the entire study.

Interventions. Children were randomly assigned to either a muscle stretching treatment group or a control group where parents were told that their child's condition was self-limiting or benign. Parents of children in the treatment group were instructed to monitor their child's muscle stretches which were to be done daily for 10 minutes each morning and evening. Children in the control group were recommended to use friction rubs and/or aspirin when necessary.

Main Outcome Measures. For the first 6 months, monthly assessments were made for both groups, during which the height and weight percentiles were recorded and all children were asked to complete a pain profile chart each week. For the final 12 months of the study, assessments occurred every 3 months. A complete physical, blood count, sedimentation rate, and a recording of skeletal

parameters were performed at the initial visit. Each child recorded their experiences in a pain profile chart each week for the 18 months of the study.

Results. The mean percentile heights for the treatment and control groups were 54% and 50% respectively, while the mean percentile weights were 47% for the treatment group and 49% for the control group. These findings suggested that growing pain syndrome occurred in relatively equal proportions of tall vs. short children and heavy vs. slim children. By the 3rd month, the mean number of pain episodes reported by children in the treatment group decreased from 10 to 1.2 per month, and by the 9th month of their study, the mean number of pain episodes was 0, and remained stable throughout the remaining 9 months of the study. The control group reported an average of 10 pain episodes at the beginning of the study, which declined until at 18 months, an average of 2 pain episodes were reported per child. The average number of pain episodes was significantly different between groups within the first 4 months, ($F(1, 28)=27.08, p<0.05$). Significantly more children in the control group were having 2 or more pain episodes per month compared to children in the treatment group at the 18 month follow-up ($p<0.05$).

Conclusions. Children with growing pain syndrome who performed regular muscle stretching had a faster resolution of pain episode frequency compared to those in the control group. The findings support previous research which has not found differences in height or weight related to pain frequency. The authors discussed that possible psychological factors, such as increased parental attention, may have affected the results yet were not measured in this study. The authors acknowledged the presence of a bias as one of the primary investigators was not blind to the treatment condition and had examined all of the patients. Future studies should examine the efficacy of the muscle stretch program compared to several other types of placebo treatments.

Øster, J. (1972). Recurrent abdominal pain, headache and limb pains in children and adolescents. *Pediatrics*, 50(3), 429-436.

Objective. To determine the prevalence of recurrent abdominal pain (RAP), headache, and limb pains without medical explanation in children and adolescents and to examine the clinical issues related to these pains.

Design. Longitudinal survey with annual follow-up for 8 years.

Setting. Various schools in Denmark.

Participants. 2,178 Danish children between 6 and 19 years old were recruited through various schools during annual medical examinations. They were examined each year for the occurrence of RAP or headache; limb pains were not examined until the final year of the study. 635 of these children were seen each year for 5 or more years. Two groups were formed: Group A consisted of 90 boys and 95 girls who reported having RAP and/or headaches for 3 or more years; Group B included 96 boys and 70 girls who had never reported RAP or headaches during the five years. 334 parents of children in Group A and 302 parents of children in Group B also participated.

Main Outcome Measures. At annual examinations, children were weighed, had their height measured, their hearing and eyesight tested, and reported the occurrence of illness during the previous year. Parental questionnaires inquired about the parent's own experience of childhood or current abdominal pain, headache, and/or limb pains.

Results. The prevalence of abdominal pain throughout the 8 year period was 12.1% for boys and 16.7% for girls. Headaches were reported by 18.6% of boys and 22.7% of girls. With the inclusion of limb pains in the final year of study, the prevalence of abdominal pains, headaches, and limb pains in the final year was 12.3%, 20.6% and 15.5% respectively, for boys, girls, and boys and girls together. Each pain condition was more prevalent in girls than in boys. After 9 years of age, the prevalence of RAP decreased from 21% in boys and 30% in girls to between 5% and 10% at ages 16 and 17 years. Headaches reached a maximal prevalence of 23% in boys and 27% in girls at 12 years of age. For limb pain, although the prevalence of this condition decreased in girls after a maximal peak at age 11 years, the condition was still more prevalent in girls at the ages of 16 and 17 years than it was for boys of the same age (13-14% versus 4%, respectively). Parents' questionnaires showed that children in Group A (pain) generally came from families with more current pain experiences as well as previous pain experiences. However, fathers of children in Group B (no pain) reported the same number of abdominal pains and more limb pains than the fathers of children in Group A when recalling childhood experiences.

Conclusions. The author concluded that the familial similarities of pain experiences may create an environment in which the child can establish "reaction patterns", not through specific physical locations of pain, but rather through pain proneness expressed by their parents.

Commentary

“Growing pains” remains the stubborn yet unsatisfactory label for a form of recurrent limb pain in otherwise healthy children who have no history or evidence of local injury or disease. The typical character of these pains is a bilateral and deep intermittent aching sensation, that is commonly localized in the muscles (and not joints) of the lower limbs (especially the calf and front of the thigh, and almost never in the arms alone). They are most often reported late in the day or at night (sometimes interfering with sleep), and may also be associated with feelings of restlessness (Champion, 1985). From the few studies examining the report of these pains in various community-based samples of children (e.g., Brenning, 1960; Naish & Apley, 1951; Øster & Nielsen, 1972; Oberklaid et al., 1997¹), the prevalence rate, at least in Western culture, appears to be approximately 10% to 15%, and with no evidence for gender-based variations.

Little is known about the etiology of these pains. Owing to the diagnosis by exclusion, more is known about the factors which do not cause them than the reverse. Despite the name, the pains are not reliably connected with growth. Children reporting these pains grow at the same rate as children who do not experience such pains (Øster & Nielsen, 1972), and the typical age bracket for pain onset (6 to 13 years) represents a period of decline in the growth rate rather than the growth spurts associated with early childhood and adolescence (Baxter, 1988). In the absence of a known organic cause, there has been longstanding interest in identifying potential psychosocial correlates. Recently, it has been suggested that, relative to a control group, the temperamental and behavioural profile of children reporting growing pains is significantly more likely to include negative mood and anxiety, as well as hyperactive and aggressive behaviour - at least in the eyes of the child's parents (Oberklaid et al., 1997). Although, in that study, it is not clear that the sampling methods were exclusive for the category of “growing pains” rather than encompassing a range of limb pains of which some may have had identifiable causes (Walco, 1997). There is also some evidence that growing pains may often co-exist with other forms of recurrent pains, such as headache or abdominal pain (e.g. Øster, 1972). This co-occurrence may suggest that growing pains tend to occur in “pain prone”

children (Walco, 1997), although the etiology of this constitutional vulnerability, either physical or psychological, remains to be established.

No specific or standard therapeutic approach has been determined. Rather, the field is dominated by anecdotal clinical reports rather than controlled intervention studies. Perhaps the only exception in the published literature is one study testing a theory that “growing pains” have an etiology related to fatigue (Baxter, 1988). Results showed that relative to a control group, children assigned to a systematic muscle stretch intervention showed more rapid resolution of pain symptoms (fewer episodes) over an 18 month period. This finding accords with the anecdotal clinical observation that “growing pains”, as a limb pain syndrome, share many symptomatic similarities with “restless legs syndrome” in adults, and that individuals complaining of either “growing pains” or “restless legs” have an uncommonly higher incidence of pain during sciatic stretch (i.e., the straight leg raise test; Champion, 1985). As it stands, “growing pains” tend to remit within one or two hours, and the condition can only be treated symptomatically. Doses of ibuprofen or paracetamol (acetaminophen), application of massage and heat to the sore areas, muscle stretching and rest from specific stressful or tiring activity have been reported as being helpful. There are no published data as to the most efficacious combination of these remedies. Also important is reassurance to both parent and child that, despite the distress and intensity of the pain, the consensus is that these pains represent a relatively non-threatening condition that is unlikely to be a symptom of a more sinister pathology (Walco, 1997). Contraindications include unilateral pain distribution and mobility problems such as limping, as well as pains that show a progressive course or have a history of less than three months (Champion, 1985).

Overall, the research into and hence treatment of “growing pains” suffers from a lack of precision in the definition of criteria for diagnosis, which has often been the case with other forms of recurrent pain in children, such as abdominal pain. Until a set of reliable diagnostic criteria are generated and uniformly applied, it is unlikely that the dearth of research into differential identification and treatment of “growing pains”, as distinct from other conditions such as juvenile fibromyalgia, can be properly addressed (Walco, 1997). In the meantime, it is likely that usage of the term “growing pains” by both clinicians and parents will persist - simply because of the implicit reassurance this name provides that the pains, while uncomfortable, can be considered to be as benign as

¹An abstract of this paper can be found in Vol. 2, No. 3 of the *Pediatric Pain Letter*.

growing up, and perhaps may even therefore be welcomed by some parents as heralding the proper healthy development of their child.

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Culture and Pain in Children and Adolescents

Abu-Saad, H. (1984). Cultural group indicators of pain in children. *Maternal-Child Nursing Journal*, 13, 187-196.

Objective. To explore how Arab-American, Asian-American and Latin-American school-age children perceive, describe, and react to pain.

Design. Retrospective survey.

Setting. Child's home, school, or recreational facility.

Participants. 24 children of each cultural background (N=72), aged 9 to 12 years residing in San Francisco, USA.

Main Outcome Measures. The survey was adapted from a pain questionnaire developed by Savedra et al. (1982). Descriptors of pain, feelings related to pain, strategies for coping with pain and thoughts about what is good about pain were compared.

Results. Falls were the most common reason for pain reported in all 3 groups. Asian-American children described psychological causes of pain more frequently than the other groups. All 3 groups most commonly described pain as "like a hurt". "Sore," "uncomfortable," and "tingling" were more often used by Arab-American children while "scary," "paralysing," and "cold" were used by Asian-American children and Latin-American children

used words like "hitting," "terrible," and "sickening". Red, black, and blue were the most commonly used adjectives to describe pain. Arab-American children were less likely to select red, while Latin-American children used more variety (i.e., peach). All of the children felt that pain made them feel miserable, scared, or like crying. All groups identified taking medicine as a way to cope, while Arab-American children were more likely to indicate they talked to a parent. Most children did not give an answer when asked what was good about pain. A few Arab-American and Latin-American children reported that pain can gain someone sympathy or special privileges. Some Asian-American children said pain helped them know when something was wrong with their body.

Conclusions. Causative factors did not differ between cultural groups but there were cultural variations regarding perception, description, and coping mechanisms for pain. Practitioners should consider these differences when dealing with patients from different backgrounds.

van Aken, M. A. G., Lieshout, C. F. M., Katz, E. R. & Heezen, T. J. M. (1989). Development of behavioral distress in reaction to acute pain in two cultures. *Journal of Pediatric Psychology*, 14(3), 421-432.

Objective. To investigate cultural, developmental, and gender differences in distress behaviour during separate phases of a bone marrow aspiration (BMA).

Design. Group comparison study.

Setting. Children's hospitals in the USA and in The Netherlands.

Participants. 3 age groups of children who suffered from acute lymphatic leukemia (ALL) undergoing a BMA. In the Netherlands, 60 outpatients (31 boys) were divided as follows: Group 1 with a mean age of 4.8 years (n=22; range 2.3 to 6.4 years); Group 2 with a mean age of 8.4 years (n=22; range 6.5-9.7 years); and Group 3 with a mean age of 13.6 years (n=16; range 10.0-18.6 years). In the United States, 115 outpatients (69 boys) were divided as follows: Group 1 with a mean age of 4.2 years (n=38; range 0.7 to 6.3 years); Group 2 with a mean age of 8.1 years (n=38; range 6.5-9.8 years); and Group 3 with a mean age of 13.3 years (n=39; range 10.0-18.6 years). For the Dutch sample: the BMA was done by the pediatric oncologist and assisted by 2 nurses; all children had at least 1 previous BMA (mean=22; range=2-49); 16 children received xylocaine before the BMA puncture and 6 children were given a sedative; locus of BMA puncture was the sternum (n=20) or crista (n=40); and BMA was

followed by a lumbar puncture for 46 of the children. For the American sample: all BMAs were performed by one of 2 nurse specialists assisted by 2 other nurses; all children had experienced 3 or more BMAs. For both cultural groups, the children were either alone or accompanied by one or both parents.

Main Outcome Measures. Distress reactions were observed during BMA using the Procedure Behavioral Rating Scale (PBRs; Katz et al., 1980) during the preparatory phase, the needle introduction, and the recovery period.

Results. The mean PBRs scores for Groups 1, 2 and 3 were 1.82, 0.64 and 0.25 for Dutch children; 3.16, 1.18 and 0.23 for American children; 2.89, 0.61 and 0.15 for boys; and 2.33, 1.38 and 0.36 for girls. Significant main effects were found for age ($p < 0.001$), phase ($p < 0.001$) and item ($p < 0.001$). PBRs scores decreased with increasing age in all 3 phases ($p < 0.001$) and was highest in the needle introduction phase. In the preparatory phase, American children showed more distress ($p < 0.001$). In both cultures all distress behaviours decreased with increasing age ($p < 0.05$), except for increasing muscle tension, stalling behaviour, and verbal expressions of fear. Culture and gender differences were minor compared with age and phase effects. In separate phases different patterns of distress behaviour were observed. The only significant context or treatment factor was locus of BMA puncture for the Dutch children ($p < 0.05$).

Conclusions. Results indicated a strong developmental decrease in distress reactions and differences in pain expression in different BMA phases. Differences in setting, cultural practices, or other social differences may account for cultural differences found in this study.

Pfefferbaum, B., Adams, J. & Aceves, J. (1990). The influence of culture on pain in Anglo and Hispanic children with cancer. *Journal of the American Academy of Child and Adolescent Psychiatry*, 29, 642-647.

Objective. To investigate the influence of cultural heritage and acculturation on the perception and expression of pain and pain-related anxiety in children with cancer.

Design. Group comparison study.

Setting. Pediatric oncology clinic, cancer treatment centre.

Participants. 78 children aged 3 to 15 years who were being treated for leukemia or lymphoma and who were scheduled for bone marrow aspiration or spinal tap procedures were recruited. 37 were of Mexican-American Hispanic descent, 6 were Hispanic of other nationalities, and 35 were Anglo.

Children were classified as either Hispanic or Anglo according to one or more of: surname, birthplace, or language use. Of the 78 original participants, 2 of the Hispanic children did not finish the study. These two individuals did not differ from the remaining participants in terms of diagnosis, disease stage, or previous experience with pain.

Main Outcome Measures. The level of acculturation of the children and their parents was measured using the Brief Language-Based Acculturation Scale (Delo et al., 1985). Children's anxiety was measured using the State Trait Anxiety Inventory for Children (STAI-C; Spielberger et al., 1973) and their parents' anxiety was measured using the State Trait Anxiety Inventory (STAI; Spielberger, 1983). Children's self-report of pain was measured using the Faces Scale and their pain behaviour was rated using the Procedure Behavior Check List (PBCL). Both of these measures were developed by LeBaron and Zeltzer (1984). A semi-structured interview was carried out in order to gain a retrospective measure of the child's perception of the degree of pain and anxiety experienced, as well as the child's recollections of their behaviours during the procedure. Staff members carrying out the procedure were also asked to rate the amount of pain that each child was expected to experience based on the degree of difficulty that occurred during each procedure on an unspecified Likert scale. They also rated the child's actual pain response during the particular procedure as compared to other children of the same age and sex.

Results. Children's pain behaviour and self-report of pain were significantly correlated for both Hispanic and Anglo groups. Neither group differed significantly from the other in regards to pain behaviour, self-reported pain, or anxiety. Acculturation was not related to pain or anxiety measures in either the children or their parents, however, Hispanic parents reported significantly more anxiety related to their child's pain than did Anglo parents. Staff assessments were significantly correlated with Anglo children's PBCL scores but not for Hispanic children's PBCL scores.

Conclusions. In this study, acculturation and cultural heritage did not have a significant effect on children's behaviour, their self-report of pain, or their pain-related anxiety. A cultural difference did exist in that Hispanic parents showed more anxiety due to their children's pain. Hospital staff members who were carrying out the procedure were less accurate in assessing Hispanic children's pain than they were in assessing Anglo children's pain.

Villaruel, A. M. & Denyes, M. J. (1991). Pain assessment in children: Theoretical and empirical validity. *Advances in Nursing Science, 14*(2), 32-41.

Objective. To develop an alternate version of the Oucher, a photographic pain intensity measurement instrument, for young African-American and Hispanic children.

Design. Scale development and validation.

Setting. Children's hospital.

Patients. Inclusion criteria were: experiencing pain in a pediatric hospital; 3 to 7 years old; of Hispanic or African-American heritage. 1 Hispanic child and 3 African-American children were photographed. 25 children from each cultural group were asked to select which photographs should make up the scale. Content validity was examined with 112 Hispanic and 143 African-American children aged 3 to 7 years old.

Main Outcome Measures. 40 to 60 photographs of each child were taken to ensure a full range of expressions of pain intensity. Adults from the two cultural groups selected 15 photographs depicting unquestionable pain and 3 depicting neutral or no pain expressions for the 1 Hispanic boy and African-American boy whose photographs most clearly reflected pain. Final selection of photographs was made by 25 children from each cultural group. They were interviewed to determine their ability to understand the concept of pain or hurt and asked to perform a seriation task with 6 geometric shapes then asked to sort the 18 photographs into 6 groups based on the degree of hurt depicted. The final 6 photographs were selected based on the level of agreement for scale position for each of the 18 photographs and descriptive data about how the children made their judgements. Only data from children who successfully completed the seriation task were included in the final analysis. Content validity was examined further by asking larger groups of children to select the order of the six photographs for each scale.

Results. Agreement levels of 80% to 100% were reached by the adults in selecting the 18 photographs for the scale. Significant within group agreement (Kendall's coefficient of concordance) on the final scale order was found for both the Hispanic (0.65, $p=0.0000$) and the African-American (0.67, $p=0.0000$) photographs using data from the 95 Hispanic and 121 African-American children who correctly completed the seriation task. Agreement for the children who did not successfully complete the seriation task was low.

Conclusions. The results provided evidence for the content validity for two culturally sensitive, self-report photographic pain intensity scales for young children. The simple seriation task was noted to be useful in determining a child's ability to sequence the photographs of the scale. These instruments enable children to participate in their own care based on their developmental level and cultural heritage.

Rømsing, J., Hertel, S., Møller-Sonnergaard, M., & Rasmussen, M. (1996). Postoperative pain in Danish children: Self-report measures of pain intensity. *Journal of Pediatric Nursing, 11*(2), 119-124.

Objective. To examine the validity of the Oucher and the Poker Chip Tool as a self-report measure of pain for Danish children with pain due to tonsillectomy.

Design. Prospective survey.

Setting. Hospital post-surgical ward.

Participants. 103 Danish children (47 males) aged 3 to 15 years who were scheduled for tonsillectomy were recruited. 3 boys between the ages of 3 and 4.5 years were not able to use the Oucher.

Main Outcome Measures. The morning of the day after surgery, each child rated his or her pain with the Poker Chip Tool prior to administration of analgesics, and 2 hours after analgesics were given. At the same times, 72 children aged 3 to 12 years used the photographic scale of the Oucher, and 28 children aged 7.5 to 15 years used the numeric scale of the Oucher. Half of the children used the Poker Chip Tool first, the other half used the Oucher first. The order of first use was random.

Results. The children experienced no difficulty using the scales. Self-report ratings of pain using the Poker Chip Tool and the Oucher were significantly correlated when either the photographic scale ($r=0.79$) or the numeric scale were used ($r=0.71$). Pain ratings on both scales were higher before analgesics were given than 2 hours after analgesics were given. Children 6.5 years old and older reported more pain before and after administration of analgesics than children under 6.5 years of age.

Conclusions. The Oucher and the Poker Chip Tool are valid instruments for assisting Danish children in reporting their pain after surgery.

Beyer, J. E., & Knott, C. B. (1998). Construct validity estimation for the African-American and Hispanic versions of the Oucher Scale. *Journal of Pediatric Nursing, 13, 20-31.*

Objective. To investigate construct validity of the African-American and Hispanic versions of the Oucher Scale as self-report measures of children's pain intensity.

Design. Survey.

Setting. Children's hospital and a community hospital.

Participants. A convenience sample of 52 African-American and 52 Hispanic children participated (48 females; mean age = 7.5 years, range = 3.3 - 12.8 years). Each ethnic group was divided such that half of each group was composed of older children capable of using the numerical version of the Oucher Scale while the other half was comprised of children only capable of using the pictorial version. Participants were randomly assigned for pre- and post-operative pain measurement; 51 were measured pre-operatively, and 53 post-operatively.

Main Outcome Measures. New African-American and Hispanic ethnic versions of the Oucher Scale and the Analogue Chromatic Continuous Scale (ACCS; Grossi, no reference given) were used to measure pain intensity. A 17-item adapted version of the Child Medical Fears Scale (CMFS; no reference given) was used to measure the children's level of fear of impending medical procedures.

Results. Strong positive correlations were found between the Oucher scales and the ACCS ($r=0.89$ to 0.97 , $p<0.001$). No differences were found between ethnic groups for either the numerical or pictorial versions of the Oucher. Weak, nonsignificant correlations were found between the CMFS scores and the Oucher Scale in all groups except for the Hispanic group using the numerical Oucher Scale. This group showed a moderate correlation ($r=0.51$, $p<0.007$) between the Oucher Scale and the CMFS. Limited data collected on Oucher scores before and after analgesic administration suggested that both ethnic Oucher scales were sensitive to and measured changes in pain experiences from analgesia.

Conclusions. Results suggested that strong convergent validity exists in support of these two ethnic versions of the Oucher Scale. They also lend support for the construct validity and, with the exception of older Hispanic children, the discriminant validity of these scales. These findings give preliminary support for the use of these versions of the Oucher Scale for clinical practice and research.

Commentary

The importance of culture in the expression and experience of pain in children is widely recognized, yet little research has been devoted to this subject, especially in children. Studies in the adult literature have shown cultural similarities and differences in pain, however we cannot rely on this literature in our approaches to assessment and treatment of pain with children. The present commentary specifically addresses studies of culture and pain in children.

In their 1993 review, Bernstein and Pachter noted only a handful of studies, and to date, there are not many more. Little empirical data are available to clinicians to help them provide more culturally sensitive assessments and interventions for children of diverse cultures who are having pain.

The studies abstracted above are good illustrations of some of the most significant issues and challenges facing researchers in the study of culture and its effect on pain in children and their families. Culture and ethnicity are often used interchangeably when they refer to the same set of characteristics involving the learning of customary beliefs, social form, and material traits of a racial, religious, or social group sharing attitudes, values, goals, and practices.

Because of world globalization, acculturation is of prime importance in the design of cultural studies. Acculturation is the process whereby ethnic members may exchange their own values, language, and lifestyle for those of the predominant culture (Gordon, 1963). In their study of acute pain in children with cancer, van Aken et al. (1989) compared two groups of children undergoing painful procedures in their respective natural cultural environments (the USA and The Netherlands) whereas Pfefferbaum et al. (1990) compared two groups of children in the same environment (the USA only) where the Hispanic children were in a different cultural context of origin. The data in these two studies reflect two different social paradigms. Comparing results of these two studies needs to be understood as such.

Acculturation is an important determinant of values, beliefs, attitudes, behaviours, and meaning. Equally important is our lack of knowledge of how parental teaching and modelling affects how children learn about pain, and how and when societal factors play a role. The complex process of children's learning and development is dependent on numerous factors which can vary from culture to culture (Cintas, 1988) and from family to family. For example, the meaning children assign to their

experiences, including pain, will reflect the sociocultural background to which they were exposed.

Variability among groups of similar cultural origins also exist and may be large, especially when acculturation has occurred. This variability needs to be explicit to avoid cultural stereotyping but also to ensure that variability within one cultural group does not account for differences attributed to different groups. For example, differences in socioeconomic status among one cultural group may result in significant changes in beliefs, attitudes, and practices within this particular group.

Abu-Saad (1984) was one of the first to investigate cultural components of pain in children. Her findings pointed to cultural similarity in causes for pain and cultural specificity in emotions related to pain among three cultural groups of children studied in an environment (the USA) where acculturation was present. Coping strategies for pain varied among the three groups. Findings such as these are valuable to practitioners working with these cultural groups in similar environments. By contrast, Pfefferbaum et al. (1990) reported similar findings in self-report and observations between two groups of Anglo and Hispanic children with cancer undergoing invasive procedures. Perhaps the lack of sensitivity and cultural congruency of the measures for Hispanic children may have accounted for this apparent similarity in the expressiveness of pain among the two groups. More culturally valid measures might have shown differences, or provided a more solid basis for supporting the similarities of acute pain response in these two groups. The lack of measures that have been validated and shown reliable for different cultures remains an important hurdle in cultural studies and may contribute to the restricted use of some findings.

Nevertheless, such studies help to provide information about specific items that may or may not be relevant with another culture, therefore contributing to cultural refinement of the instrument. Measures of self-report which have meaning and relevancy across cultures are scarce. This type of cultural congruency in self-report is well illustrated by Beyer and her colleagues (1998). This work provides the clinician with a valid and reliable tool for children of different ethnic groups and has the advantage of bypassing the ethnocultural biases of the health professional.

Although most domains of research are moving beyond descriptive work, well designed descriptive studies of culture and pain in children are still required to substantiate our understanding. We need to develop more culturally sensitive, valid, and reliable tools to assess the

pain of children of different cultures. We then will be better equipped as clinicians to optimize pain outcomes for children and families of many cultures in the context where they are living or seeking health care.

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Recent Articles

Smith, G. A., Strausbaugh, S. D., Harbeck-Weber, C., Cohen, D. M., Shields, B. J., & Powers, J. D. (1997). New non-cocaine-containing topical anesthetics compared with tetracaine-adrenaline-cocaine during repair of lacerations. *Pediatrics*, 100 (5), 825-830.

Objective. To compare the effectiveness of 3 topical anesthetics without cocaine to that of an anesthetic containing cocaine for reducing pain during laceration repair in children.

Design. Prospective, randomized, double-blind, controlled trial.

Setting. Children's hospital emergency department.

Participants. 240 children with lacerations of 5 cm or less requiring sutures. The children ranged from 1 to 18 years of age (M = 5.3 years; 65% male).

Intervention. Children were randomly assigned to receive 1 of the following 4 topical anesthetics prior to suturing: 1) 3.56% prilocaine with .99% phenylephrine (prilophen); 2) 1.0% tetracaine with 5.0% phenylephrine (tetraphen); 3) 1.0% tetracaine, 1.00% lidocaine, and 2.50% phenylephrine (tetralidophen); or 4) 1.0% tetracaine, 1:4000 adrenaline, and 4.0% cocaine (TAC). All anesthetics were applied using a 2x2 inch gauze pad saturated with 3 mL of anesthetic, and were held in place for 20 minutes.

Main Outcome Measures. Children 5 years of age or older, parents, suture technicians, and researchers rated pain with a 100 mm visual analogue scale (VAS) with anchors of "no pain" and "greatest pain imaginable". Parents, technicians and researchers also rated the child's pain with a 7-point scale anchored by 1 (no pain) and 7 (extreme pain). Technicians also completed a verbal "anesthetic effectiveness" scale (no anesthesia, partial anesthesia, complete anesthesia).

Results. There were no significant differences between groups for VAS ratings completed by parents, researchers, or children. However, VAS ratings by technicians did differ significantly. Post-hoc analyses indicated that ratings for children receiving prilophen were significantly higher than for those receiving TAC. No significant differences were found between either prilophen or TAC and the other two anesthetics. Likert ratings by parents did not differ between groups, while those of technicians and researchers did. Post-hoc analyses revealed that, for researchers, no group differed significantly from another. For technicians, however, numerical pain ratings were significantly lower with TAC than with prilophen or tetralidophen, but not tetraphen. Prilophen and tetralidophen scores, however, did not differ significantly from each other or tetraphen. No significant differences due to type of anesthetic were found for anesthetic effectiveness ratings by technicians.

Conclusion. This study provides preliminary evidence that 3 topical anesthetics without cocaine are as effective as a preparation containing cocaine. The differences found between the VAS and rating scale scores of technicians, however, raise the possibility that subtle differences may exist, although they are only detectable by individuals quite familiar with children's behaviour in this situation.

Dunbar, P. J., Buckley, P., Gavrin, J. R., Sanders, J. E. & Chapman, C. R. (1995). Use of patient-controlled analgesia for pain control for children receiving bone marrow transplant. *Journal of Pain and Symptom Management*, 10(8), 604-611.

Objective. To determine whether or not children undergoing bone marrow transplants (BMT) were capable of effectively and safely self-administering patient-controlled analgesia (PCA) for pain caused by oral mucositis, graft-versus-host disease (GVHD), varicella zoster, and leukemia relapse.

Design. Retrospective survey (chart review).

Setting. Cancer research centre.

Participants. Of the 856 patients who received a BMT

during 1992 and 1993, 39 were both under 12 years of age and used a PCA regimen for pain control. The records of these children (21 males; between 4 and 12 years of age) were reviewed.

Main Outcome Measures. PCA machines using two concentrations of morphine (1 or 5mg/mL) and hydromorphone (0.2 or 1 mg/mL) were used. Analgesic use was recorded by the machines and this information was transferred to records. Pain and symptom evaluations, satisfaction with pain control, and the child's mental status were also recorded.

Results. 95% (37/39) of the children were able to effectively and safely use PCA. A 10-year-old male and a 6-year-old female were unable to successfully use the PCA due to a variety of psychological problems (e.g., behavioural difficulties, diminished parental support, attention deficit disorder). 8 of the 37 children who successfully employed the PCA used PCA for fewer than 10 days, 18 children used PCA for between 10 and 20 days, 9 children used PCA for 20 to 30 days, and 6 children for longer than 30 days. The median length of PCA was 19 days. Morphine was replaced by hydromorphone in 10 patients to counter side effects of the morphine. The 37 successful users of PCA were observed to become proficient in its application without a number of potential difficulties (e.g., respiratory depression, tolerance, psychological dependence, family member misuse, overdose). It was determined that 69% of the patients used PCA for oral mucositis, 18% for GVHD pain, 5% for surgical pain and 8% for other pain. Abdominal pain was the most frequent complaint in association with GVHD.

Conclusions. The authors suggest that although pain ratings with standard scales were not used, the cautious assessments employed were satisfactory for obtaining pain information. Promotion of more rapid recovery is suggested as a result of an active role in pain management.

Review Articles

The *Pediatric Pain Letter* briefly notes the following recent review articles:

Finley, G. A. (1998). Paediatric pain: a year in review. *Current Opinion in Anaesthesiology*, 11, 295-299.

In this paper, the author reviewed articles published in 1997 on pediatric pain and concluded that significant advances have been made in neonatal pain and pain assessment. He identified Taddio, Katz, Illersich & Koren (1997; (abstracted in Vol. 2, No. 1 of the *Pediatric Pain Letter*) as the landmark article of the year.

Stevens, B., Taddio, A., Olsson, A. & Einarson, T. (1997). The efficacy of sucrose for relieving procedural pain in neonates - a systematic review and meta-analysis. *Acta Pediatrics*, 86, 837-42.

Stevens, B. & Koren, G. (1998). Evidence-based pain management for infants, *Current Opinion in Pediatrics*, 10(2), 203-207.

Both of these papers provide very useful information for the clinician and researcher interested in pain in neonates and infants.

Book Review

Roy, R. (1998). *Childhood abuse and chronic pain: A curious relationship*. Toronto: University of Toronto Press, ISBN 0-8020-7790-0 (paperback), 160 pages, \$16.95 (CDN).

This brief book by a well known professor in the Faculty of Social Work at the University of Manitoba in Winnipeg, Canada, focuses on the psychodynamic approach developed by Engel and Szasz, supplemented by the author's own perspective. The book explicitly excluded psycho-physiological, organic, and behavioural perspectives on the relationship between chronic pain and childhood abuse. The author also did not critically appraise the literature but rather presented an annotation and overview of the literature. The focus is on adult chronic pain, and there are only oblique references to any relationship between childhood abuse and childhood pain.

It is clear that the author is a caring clinician, who has done a major service by highlighting a range of ways in which factors related to childhood abuse might precipitate and maintain pain in adults. The case descriptions of 21 patients are extensively discussed, and the literature is reviewed from the author's perspective. However, I found

this to be a very disappointing book. It may be unfair to wish the author had written a different book, but an evidence-based approach in which all of the literature (including the biological, behavioural, psychodynamic, social, and developmental literatures) was integrated and evaluated was what I was hoping for. This book will be of interest to those wishing a highly idiosyncratic introduction to the topic of childhood abuse and adult chronic pain. I caution the reader to be aware that the psychodynamic approach in regards to case formulation and treatment has not received careful empirical evaluation in this particular area.

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Announcements

Meetings

August 22 -27, 1999: 9th World Congress on Pain, Vienna, Austria, the triennial scientific meeting of the International Association for the Study of Pain. The Congress is open to those working in or interested in any aspect of acute pain, chronic pain, or cancer pain, including research and treatment and features leading world experts in each field. Contact the IASP, 909 NE 43rd St., Suite 306, Seattle, WA, 98105, USA, tel 206-547-6409; fax 206-547-1703, email: IASP@locke.hs.washington.edu
[www: http://www.halcyon.com/iasp](http://www.halcyon.com/iasp)

May 13-16, 1999. Annual meeting of the Canadian Pain Society (IASP Chapter) to be held in St. John's, Newfoundland, Canada. For further information, please contact S. Lefort: fax 709-753-6266 or via the internet at <http://www.medicine.dal.ca/gorgs/cps/>

June 18-21, 2000. 5th International Symposium on Pediatric Pain to be held in London, UK. This meeting is sponsored by the Special Interest Group on Pain in Childhood. For further information, please contact Dr. A. Goldman, Symptom Care Team, Great Ormond Street

Hospital for Children, Great Ormond Street, London, WC1N 3JH, United Kingdom, fax 44-171-813-8588, email: a.goldman@ich.ucl.ac.uk

Call For Submissions: We need your help in contributing copies of protocols, policies, and pamphlets on pediatric pain to the *Pediatric Pain Sourcebook of Protocols, Policies, and Pamphlets* - a World Wide Web and looseleaf binder publication designed to provide health care professionals world wide with easy access to standard pediatric pain management information. Please request a Contributor's Form from Allan Hennigar at ahennig@is.dal.ca or at the address below. You will be sent all the material you need to have your protocol published in the *Pediatric Pain Sourcebook*.

Pediatric Pain Sourcebook
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Currently Available from IASP Press: *Measurement of Pain in Infants and Children, Progress in Pain Research and Management, Volume 10*, G. A. Finley & P. J. McGrath (Eds.), IASP Press, Seattle, 1998, 290 pages, \$67.00 US funds (\$43.55 US for IASP members; hardbound). ISBN 0-931092-20-5. This book brings together some of the most productive investigators from Europe, North America, and Australia to share their understanding of different approaches to the field. Basic and clinical science are represented, as are different disciplines of clinical practice in psychology, nursing, and medicine. To receive detailed information about ordering this book, contact IASP Press, 909 NE 43rd St., Suite 306, Seattle, WA, 98105, USA. Fax (206) 547-1703.

*Short announcements on pediatric pain
will be published gratis.*

If you would like to participate

Your participation in abstracting and writing commentaries for the Pediatric Pain Letter is welcomed. Please send submissions according to the specifications outlined in our Author's Kit. An Author's Kit can be obtained from Jill Hatchette, Editorial Assistant, Pediatric Pain Letter, Psychology Department, Dalhousie University, Halifax, Nova Scotia, B3H 4J1; email jhatchet@is.dal.ca; requests can be made in writing or by email. Abstracts and commentaries on any aspect of pain in infants, children, and/or adolescents are appropriate. We will attempt to use abstracts and commentaries but the editors reserve the right to edit or reject contributions.



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