

# PAIN ASSESSMENT USING THE ADOLESCENT PEDIATRIC PAIN TOOL: a systematic literature review

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**BACKGROUND** Multidimensional tools have been recommended to assess chronic pain (von Baeyer & Spagrud, 2007). The Adolescent Pediatric Pain Tool (APPT) is a multidimensional tool that assesses pain location (body outline diagram; BOD), intensity (word-graphic-rating-scale; WGRS) and quality (67 pain descriptors).

**OBJECTIVES** To identify age range, health conditions, settings, and purpose for which APPT has been used; the components used; and its clinical and research utility.

**METHODS** A systematic review was undertaken.

Databases: CINAHL, Medline, PubMed, Scielo and PsycInfo (1990 to May 2011)

Search terms: "Adolescent Pediatric Pain Tool" OR APPT, pain, child OR adolescent.

Inclusion criteria: All age groups, health conditions and settings. Type of studies: primary studies published in English and Portuguese.

Review method: Full texts were assessed by two reviewers independently.

## RESULTS

**Search outcome:** The search yielded 330 references but only 94 had information related to pain; 74 references were excluded because they did not address the issue of this review. Therefore, 22 primary studies were included.

**Included studies** **Studies on sickle cell disease** Beyer, J., 2000. Judging the effectiveness of analgesia for children and adolescents during vaso-occlusive events of sickle cell disease. *Journal of pain and symptom management*, 19(1), pp. 63-72. Crandall, M. & Savedra, M., 2005. Multidimensional Assessment Using the Adolescent Pediatric Pain Tool: A Case Report. *Journal of Society of Pediatric Nurses*, 10(3), pp. 115-123. Franck, L. S., Treadwell, M., Jacob, E. & Vichinsky, E., 2002. Assessment of Sickle Cell Pain in Children and Young Adults Using the Adolescent Pediatric Pain Tool. *Journal of Pain and Symptom Management*, 23(2), pp. 114-120. Granados, R. & Jacob, E., 2009. Pain Experience in Hospitalized Adults with Sickle Cell Disease. *Medsurg Nursing*, 18(3), pp. 161-182. Jacob, E. et al., 2003. Changes in intensity, location, and quality of vaso-occlusive pain in children with sickle cell disease. *Pain*, Volume 102, pp. 187-193. Jacob, E., Hockenberry, M. & Mueller, B., 2008a. Effects of Patient Controlled Analgesia Hydromorphone during Acute Painful Episodes in Adolescents with Sickle Cell Disease: A Pilot Study. *Journal of Pain Management*, 1(2), pp. 173-178. **Studies on surgical procedures** Gillies, M., Smith, L. & Parry-Jones, W., 2001. Postoperative pain: a comparison of adolescent inpatient and day patient experiences. *International Journal of Nursing Studies*, Volume 38, pp. 329-337. Kotzer, A. M., 2000. Factors Predicting Postoperative Pain in Children and Adolescents Following Spine Fusion. *Issues in Comprehensive Pediatric Nursing*, Volume 23, pp. 83-102. Savedra, M., Holzemer, W., Tesler, M. D. & Wilkie, D. J., 1993. Assessment of Postoperation Pain In Children and Adolescents Using the Adolescent Pediatric Pain Tool. *Nursing Research*, 42(1), pp. 5-8. Young, N., Bell, D. & Anthony, A., 1994. Pediatric Pain Patterns During Ilizarov Treatment of Limb Length Discrepancy and Angular Deformity. *Journal of Pediatric Orthopaedics*, Volume 14, pp. 352-357. **Studies on cancer** Gedaly-Duff, V. et al., 2006. Pain, sleep disturbance, and fatigue in children with leukemia and their parents: a pilot study. *Oncology nursing forum*, 33(3), pp. 641-646. Jacob, E., Sambuco, G., McCarthy, K. & Hockenberry, M., 2008b. Intensity, Location and Quality of Pain in Spanish-Speaking Children with Cancer. *Pediatric Nursing*, 34(1), pp. 45-52. van Cleve, L., Muñoz, C., Bossert, E. & Savedra, M., 2001. Children's and adolescents' pain language in Spanish: translation of a measure. *Pain Management Nursing*, 2(3), pp. 110-118. van Cleve, L. et al., 2004. The Pain Experience of Children With Leukemia During the First Year After Diagnosis. *Nursing Research*, 53(1), pp. 1-10. **Studies on venipuncture** Bournaki, M.-C., 1997. Correlates of Pain-Related Responses to Venipunctures in School-Age Children. *Nursing Research*, 46(3), pp. 147-154. van Cleve, L., Johnson, L. & Pothier, P., 1996. Pain Responses of Hospitalized Infants and Children to Venipuncture and Intravenous Cannulation. *Journal of Pediatric Nursing*, 11(3), pp. 161-168. **Studies on blunt trauma injury** Crandall, M., Miaskowski, C., Kools, S. & Savedra, M., 2002. The pain experience of adolescents after acute blunt traumatic injury. *Pain Management Nursing*, 3(3), pp. 110-114. Crandall, M., Kools, S., Miaskowski, C. & Savedra, M., 2007. Adolescents' Pain Experiences Following Acute Blunt Traumatic Injury: Struggle for Internal Control. *Journal for Specialists in Pediatric Nursing*, 12(4), pp. 224-237. **Study on various medical problems** Franck, L. S. et al., 2004. The symptom experience of hospitalised Chinese children and adolescents and relationship to pre-hospital factors and behaviour problems. *International Journal of Nursing Studies*, Volume 41, pp. 661-669. **Study on HIV** Holzemer, W. L., Henry, S. B. & Reilly, C., 1998. Assessing and managing pain in AIDS care: the patient perspective. *The Journal of the Association of Nurses in AIDS Care*, 9(1), pp. 22-30. **Study on allergy testing** Jeffs, D. A., 2007. A Pilot Study Of Distraction For Adolescents During Allergy Testing. *JSPN*, 12(3), pp. 170-185. **Other references** Enskär, K. & Essen, L., 2008. Physical problems and psychosocial function in children with cancer. *Paediatric Nursing*, 20(3), pp. 37-41. Gold, J. et al., 2009. Pediatric Chronic Pain and Health-Related Quality of Life. *Journal of Pediatric Nursing*, 24(2), pp. 141-150. Huguet, A. & Miró, J., 2008. The Severity of Chronic Pediatric Pain: An Epidemiological Study. *The Journal of Pain*, 9(3), pp. 226-236. on Baeyer, C. L. & Spagrud, L. J., 2007. Systematic review of observational (behavioral) measures of pain for children and adolescents aged 3 to 18 years. *Pain*, Volume 127, pp. 140-150.

### Age range

- I. Used in 1714 patients aged 2-68 yo.
- II. Twelve studies included patients aged 8-17 yo, the age range for which the tool was initially validated.

### Settings

- I. Predominantly used in hospitalized children.
- II. Also used at home, outpatient clinics and community facilities.

### Purposes

- I. Examine pain experience and its correlates.
- II. Assess pain control strategies.
- III. Feasibility studies.

### Health conditions

- I. Sickle cell disease (six studies)
- II. Surgical procedures (five studies).
- III. Cancer (four studies).
- IV. Blunt trauma injury (two studies).
- V. Venipuncture (two studies).
- VI. Human immunodeficiency virus (HIV) (one study).
- VII. Allergy testing (one study).
- VIII. Various medical problems (one study).

Regarding pain, it was either acute pain episodes or chronic pain.

### Components used

- I. Most of the studies used the 3 components of the APPT.
- II. Some studies used the WGRS or the BOD alone.
- III. In some studies the WGRS was replaced by the Numeric Rating Scale (NRS) or the African-American Oucher (AO).

Outcome measures within each component of the APPT varied among the studies.

### Reports on Clinical utility

- I. Provides information on aetiology, influencing factors, impact on daily life, patterns and quality of pain
- II. Provides information on progress of pain during the course of hospitalization
- III. Provides information on efficacy of pain management
- IV. Helps clinicians to design interventional plans tailored to physical and psychosocial patients' functions
- V. List of pain descriptors reveals the lack of control over pain, fatigue, immobility and fear
- VI. Pain location information can be useful in predicting the amount of analgesia a patient will need
- VII. Allows patients to talk about their own pain experiences in a concrete way

### Reports on research utility

- I. Data are easy to score and analyze.
- II. Construct validity and internal consistency is established in patients 8 to 17 yo. Below and above this age group the psychometric properties have not been reported.
- III. Sensitive to changes in pain: pain intensity, number of pain locations and number of pain descriptors decreased after pain management.
- IV. The WGRS is highly correlated with the NRS and the African-American Oucher.
- V. BOD is helpful to identify locations and quantify the extent of pain.
- VI. List of pain descriptors captures the essence of pain experience.
- VII. Helpful to gain in-depth knowledge about pain experiences.
- VIII. Spanish and Chinese versions of the APPT are available but no information on its validity and reliability is documented.

## DISCUSSION

- I. Being a multidimensional tool, the APPT facilitates a comprehensive self-report of the pain experience of children and adolescents.
- II. It provides information on the extensiveness and spatial distribution of pain in the body (BOD) but clinical usefulness and interpretability of these outcomes remain to be confirmed.
- III. Some studies replaced the WGRS by the NRS or the Oucher which may indicate the existence of potential pitfalls of the WGRS.
- IV. Changes in pain descriptors are reported to give information on the effectiveness of pain interventions. However, it is necessary to establish what changes are clinically significant (the number and/or the type of descriptors).
- V. The major limitation to clinical use was that clinicians did not know about the tool.
- VI. Different scoring methods were used which makes it difficult to compare results across the studies.

## IMPLICATIONS FOR PRACTICE & RESEARCH

- I. The APPT is reported as readily understood and completed by the children and helpful to make pain management decisions. Therefore, it can be incorporated into routine pain assessment. Professionals must be educated to use and interpret this tool.
- II. Further validation is needed in patients below 8yo and above 17yo. Translated versions of the APPT must go through a process of semantic validation.
- III. Acceptability and properties of the WGRS should be investigated. A reduced version of the list of pain descriptors may be appropriate to reduce burden.
- IV. The relationship between pain location, intensity and quality needs to be determined.



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**References** Enskär, K. & Essen, L., 2008. Physical problems and psychosocial function in children with cancer. *Paediatric Nursing*, 20(3), pp. 37-41. Gold, J. et al., 2009. Pediatric Chronic Pain and Health-Related Quality of Life. *Journal of Pediatric Nursing*, 24(2), pp. 141-150. Huguet, A. & Miró, J., 2008. The Severity of Chronic Pediatric Pain: An Epidemiological Study. *The Journal of Pain*, 9(3), pp. 226-236. on Baeyer, C. L. & Spagrud, L. J., 2007. Systematic review of observational (behavioral) measures of pain for children and adolescents aged 3 to 18 years. *Pain*, Volume 127, pp. 140-150.