Research Article

Examination of Different Pain Scales

Esra DH[1]* and Yildirim SA[2]

[1]Department of Physiotherapy and Rehabilitation, Mustafa Kemal University, Turkey

[2]Department of Physical Therapy and Rehabilitation, Hacettepe University, Turkey

*Corresponding author: Esra DOGRU HUZMELI, Department of Physiotherapy and Rehabilitation, School of Physical Therapy and Rehabilitation, Mustafa Kemal University, Hatay, Turkey

Abstract

Aim: There are many pain assessment techniques, and the best scale is not clear. The purpose of this study was to examine a self-report questionnaire, observational scale, and verbal scale; describe physiotherapist–parent–children's postoperative pain assessment correlation; and address the preference and clinical utility of validated pain scale.

Methods: The participants in the study consisted of 101 children (3–18 years, 75 boys and 26 girls). The assessment was made in the postoperative 30th minute when they were fully awake. Before the assessment, children were asked their demographic datas. Pain was assessed using four validated and standardized pain scales: Oucher, Face, Legs, Activity, Cry and Consolability (FLACC), the Faces Pain Scale, and the Verbal Rating Scale.

Results: To assess the correlation between four pain scales, Spearmen correlation calculations were used. Oucher has a positive and strong correlation with the Verbal Rating Scale (VRS) (0.727) and Faces Pain Scale (FPS) (0.757). VRS has a strong and positive correlation with FPS (0.744). FLACC has a moderate and positive correlation with FPS and Oucher, but a weak correlation with VRS. Oucher was the most preferred scale by the children. Fourteen children could not decide which scale they preferred.

Discussion: Oucher was the most preferred scale by the children and had a uniformly increasing relationship with FPS and VRS. This finding has implications for research on pain management using Oucher, which was a reliable and preferred scale in children. It was found they in case the child could not define pain, parents' assessments were reliable.

Keywords: Pain; Children; Oucher; Faces pain scale; FLACC

Introduction

Pain is an unpleasant sensory or emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Pain is always subjective. Each individual learns the application of the word through experiences related to injury in early life [1]. Babies and people with cognitive deficits feel pain without being capable of describing the pain that they feel. All children normally experience pain from different sources. Pain following surgery in infants and children delays healing and increases morbidity [2-5].

In 1984, Ross, et al. the measurement and evaluation of pain in infants and children had been almost completely ignored claimed [5]. Some developments must have been made during the intervening period, since the past 20 years have brought realization to the clinicians involved in the treatment of children that pain is a real phenomenon in children. There have been significant improvements in awareness, assessment, and treatment of children's pain in the last 20 years [5-9].

The accurate measurement of pain in children is essential for planning treatment [5]. A large number of measurement techniques have been devised to measure pain in children. These include observational checklists, physiological responses, self-report questionnaires, selections from lists of descriptors, selection from interval scales, Visual Analog Scales (VAS), and projective techniques.

The psychological measures are all based on either domain sampling or psychophysical scaling [6-9]. Thus, there are many pain assessment techniques, and the best scale is not clear. The evaluator should choose tools that are valid and reliable, as well as tools that are informative about children's pain experiences [6,9-11].

Parents and children's assessments of children's pain have been very similar according to earlier studies. Thus, it can be assumed that parents know their children well and can assess their pain in a reliable way [6,12,13].

A perfectly reliable and valid measurement of pain intensity is unattainable. Specifically, a gold-standard pain scale for use with all children is not available.

The purpose of this study was to 1. Examine self-report questionnaire, observational scale and verbal scale and 2. To describe physiotherapist-parent-children's postoperative pain assessment correlation and 3. To address the preference and clinical utility of validated pain scales.

Methods

The study was conducted at Kutahya State Hospital. The participants in the study consisted of 101 children (3–18 years, 75 boys and 26 girls) (Table 1). Their demographic datas and operation methods were questioned. Ethical clearance was obtained from the Hacettepe University Health Institute's Ethics Committee,

Table 1: Demographic data and operation methods.

		N	%
Sex	Girls	26	25.74
	Boys	75	74.25
Operation Type	Dental operation	24	23.76
	Inguinal hernia operation	20	19.80
	Tonsillectomy	10	9.9
	Urological operation	42	41.58
	Appendectomy	2	1.98
	Orthopedic problems operation	3	2.97

Table 2: Correlation between pain scales.

	FLACC		Oucher		VRS		FPS	
	rho	p	rho	p	rho	p	rho	p
FLACC	1.000	0.001	0.456	0.001	0.391	0.001	0.496	0.001
Oucher	0.456	0.001	1.000	0.001	**0.727**	0.001	**0.757**	0.001
VRS	0.391	0.001	**0.727**	0.001	1.000	0.001	**0.744**	0.001
FPS	0.496	0.001	**0.757**	0.001	0.744	0.001	1.000	0.001

and written informed consent was obtained from parents prior to enrollment in the study. Children who have mental, vision, hearing, neurological, or developmental problems; complications after acute surgery and whose native language was not Turkish were excluded from the study.

The assessment was made in the postoperative 30th minute when children were fully awake. Before the assessment, children were asked their name, age, etc., to be sure of their wakefulness. Pain was assessed using four validated and standardized pain scales: Oucher, FLACC, the Faces Pain Scale, and the Verbal Rating Scale. The children were asked which scale they preferred the most. FLACC was not included in the preferred scale question because it was an observational scale only.

Assessment of pain in children can be achieved by relying on children's self-reporting, physiologic parameters, and behavioral changes. Although self-reporting is considered the preferred approach for pain assessment, in many clinical and home settings, the practitioner has to rely on the parental report of children's pain [6,13]. Parents and physiotherapist scored the children's pain. Children and parents were blinded from each other's scores.

Oucher is a poster-like instrument designed to help children provide self-reports of the intensity of their pain. It consists of two scales: a 0–100 numerical scale for older children and a six-picture photographic scale for younger children. The children were asked to choose the face that the best described their pain intensity [6]. FLACC is the acronym for Face, Legs, Activity, Cry, and Consolability. The scale has been validated for children. The patient is assessed in each of these categories, with a score applied to behaviors evaluated. The five scores are totaled, and the severity of pain is determined based on a 0–10 pain scale [9] The Faces Pain Scale (FPS) is a self-reported measure of pain intensity developed for children. There are pictures of some faces on the scale. The faces show how much pain or discomfort individual is feeling. The face on the left shows no pain. Each face shows more and more pain, up to the last face that shows

Table 3: Correlation between parent, physiotherapist, and child in FPS, VRS, and Oucher.

Faces Pain scale	p	Rho
Parent-Physiotherapist	0.0001	0.606
Physiotherapist-Child	0.0001	0.540
Child-Parent	0.0001	0.604
Verbal Rating Scale		
Parent-Physiotherapist	0.0001	0.503
Physiotherapist-Child	0.0001	0.543
Child-Parent	0.0001	0.623
Oucher		
Parent-Physiotherapist	0.0001	0.608
Physiotherapist-Child	0.0001	0.648
Child-Parent	0.0001	0.737

Spearmen correlation.

the worst pain possible [10-13]. Verbal Rating Scale (VRS) is a scale uses descriptive words denoting varying intensities of pain. The child chooses the one word that most describes his or her pain, using "No pain," "Mild pain," "Moderate pain," and "Severe pain" [14,15].

Data analysis

SPSS software 2008 was used for the statistical analysis. Descriptive and inferential statistical methods were used. Spearmen correlations were used to examine the correlation between pain scales. The significance of the correlation was defined as 0–0.19 ("very weak"), 0.20–0.39 ("weak"), 0.40–0.59 ("moderate"), 0.60–0.79 ("strong"), and 0.80–1.0 ("very strong") [16].

Results

Data collection was conducted during a six-month period from January 2010 to July 2010. After enrollment, details of demographics and procedural characteristics were recorded in the subject datasheet. Postop patients that had different operations methods were included in the study (Table 1).

To assess the correlation between four pain scales, Spearmen correlation calculations are presented in (Table 2). Oucher had a positive and strong correlation with VRS (0.727) and FPS (0.757). VRS had a strong and positive correlation with FPS (0.744). FLACC had a moderate and positive correlation with FPS and Oucher, and a weak correlation with VRS (Table 2).

The correlations between parent, physiotherapist, and child in FPS are presented in (Table 3). There was a positive and strong correlation between parent and physiotherapist (0.606) and child and parent (0.604). There was a moderate correlation between physiotherapist and child (0.540).

The correlations between parent, physiotherapist and child in VRS are presented in (Table 3). There was a positive and strong correlation between child and parent (0.623). There was a moderate correlation between physiotherapist and child (0.543) and parent and physiotherapist (0.503).

The correlations between parent, physiotherapist, and child in Oucher are presented in (Table 3). There was a positive and strong correlation between parent and physiotherapist (0.608), child and

Table 4: The most preferred scale by children.

Scales	3–6 years		7–10 years		11–14 years		15–18 years		Total	
	n	%	n	%	n	%	n	%	n	%
Oucher	11	12.6	29	33.3	19	21.8	1	1.14	**60**	59.40
VRS	1	1.14	3	3.44	1	1.14	2	2.18	**7**	6.93
FPS	8	9.19	10	11.4	2	9	0	0	**20**	19.80
Children couldn't decide									**14**	13.86

parent (0.737), and physiotherapist and child (0.648).

Oucher was the most preferred scale by the children. Fourteen children could not decide which scale they preferred (Table 4).

Discussion

Pain severity assessment is intended to improve the quality of pain management. Measures of a patient's pain must be reliable and accurately reflect the intensity of pain being experienced. The practice of assessing pain as "the fifth vital sign" has become widespread, despite a lack of published evidence demonstrating the accuracy and effectiveness of screening strategies [1,17]. Pain is very common among pediatric populations and is one of the most common factors that impair quality of life [11,17]. Self-report scales should be used for clinical decisions to treat pain in children wherever possible to guide management, but in case the child cannot be assessed, parental pain scores can be reliably used as a surrogate measure. Parents and children's assessments of children's pain have been very similar, according to earlier studies. Thus, it can be assumed that parents know their children well and can assess their pain in a reliable way [6,12,13,18,19].

Chamber, et al. investigated 5 different scales with 75 children undergoing venipuncture, and their parents. Following venipuncture, children and parents independently rated the child's pain using five different face scales and indicated which of the scales they preferred. The level of agreement between child and parent reports of pain was low and did not vary as a function of the scale type used; parents overestimated their children's pain using all five scales [20]. In our study, we found that parents and children's pain scores were similar. In case the child cannot define their pain; the child was aggressive, excited, etc.; and communication cannot be established, clinicians can rely on parents' pain assessment by using self-report scales. Children and physiotherapists' assessments were similar, but were not as strong as the parent and children's. Parents understood the feeling of their children better than the health staff.

In a study of four self-report scales that included Oucher, Wong Banker was found to be most preferred [21]. In our study, Oucher was most preferred by children as a rating scale in all age groups. Oucher is a colorful and vertical scale, so describing pain was easier and more attractive for children.

Three commonly used pain scales, the visual analog scale, the Wong-Baker Faces Pain Scale, and the Faces Pain Scale-Revised were administered to 122 Thai children, of whom were HIV-infected, in order to assess their validity. These scales presented moderate to good correlation and moderate agreement, sufficient for valid use in Thai children [22]. Faces scales are ordinal outcome measures consisting of a number of categorical responses ordered in a specific pattern

[1,15,23,24]. In our study, there was a good correlation between self-report scales and we found that those scales can be used with Turkish children.

Preschool children or children who have cognitive and verbal deficits may be unable to describe their feeling of pain or physical discomfort. When children are recovering from anesthesia, it is difficult for them to assess their pain [23-25]. Before they are fully awake, they can be restless, and factors like excitement, agitation, or sedation may influence their outcomes. Therefore, observation of behavior can be an acceptable alternative when valid self-reporting is not possible. Behavioral indicators, such as facial expression, crying, and body movements, are used to estimate the presence of pain and pain intensity in children [23-28]. In our study, we found that FLACC did not a show strong correlation with other self-report scales. So if children are awake and have the mental competence, self-report scales are better for assessment of children's pain than behavioral scales.

Conclusion

Oucher was found to have an excellent correlation in children with acute pain and had a uniformly increasing relationship with FPS and VRS. This finding has implications for research on pain management using Oucher as a reliable and preferred scale in Turkish children so we suggest to the clinicians in case the children cannot define their pain, parents' assessment is reliable.

References

1. IASP. Pain. 1979; (6): 249-252.

2. Correia LL, Beatriz M, Linhares M. Assessment of the behavior of children in painful situations: Literature review. J Pediatr. 2008; 84: 477-486.

3. Merskey H, Albe-Fessard DG, Bonic JJ. Pain terms: A list with definitions and notes on usage: Recommended by the International Association for Study of Pain (IASP) Subcommittee on Taxonomy. Pain. 1979; 6: 249-252.

4. Rusy LM, Weisman SJ. Acute postoperative pediatric pain management: Pearls from a busy children's hospital. Techniques in Regional Anesthesia & Pain Management. 2002; 6: 66-69.

5. Ross DM, Ross SA. The importance of type of question, psychological climate and subject set in interviewing children about pain. Pain. 1984; 19: 71-79.

6. Beyer JE. The Oucher: A user's manual and technical report. 1984. Evanston, IL: The Hospital Play Equipment Company.

7. Bhatt-Mehta V. Current guidelines for the treatment of acute pain in children. Drugs. 1996; 51: 760–776.

8. Hunter M, McDowell L, Hennessy R, Cassey J. An evaluation of the Faces Pain Scale with young children. Journal of Pain and Symptom Management. 2000; 20: 122-129.

9. Merkel SI, Voepel-Lewis T, Shayevitz JR, Malviya S. The FLACC: A behavioral scale for scoring postoperative pain in young children. Pediatric Nursing. 1997; 23: 293-297.

10. Bieri D, Reeve R, Champion GD, Addicoat L, Ziegler J. The Faces Pain Scale for the self-assessment of the severity of pain experienced by children: Development, initial validation and preliminary investigation for ratio scale properties. Pain. 1990; 41: 139-150.

11. Fernandes AM, De Campos C, Batalha L, Perdigao A, Jacob E. Pain assessment using the Adolescent Pediatric Pain Tool: A systematic review. Pain Res Manag. 2014; 19: 212-218.

12. Hester NK. The preoperational child's reaction to immunization. Nursing Research. 1979; 28: 250-255.

13. Kankkunen P, Pietila AM, Julkunen KV. Families' and children's postoperative pain literature review. Journal of Pediatric Nursing. 2004; 19:133-139.

14. Benestad O, Vinje O, Veierod MB, Vandvik IH. Quantitative and qualitative assessments of pain in children with juvenile chronic arthritis based on the Norwegian version of the Pediatric Pain Questionnaire. Scandinavian Journal of Rheumatology. 1996; 25: 293-299.

15. Keck JF, Gerkensmeyer J, Joyce B, Schade JG. Reliability and validity of the faces and word descriptor scales to measure procedural pain. Journal of Pediatric Nursing. 1996; 11: 368-374.

16. Spearman's correlation.

17. Garra G, Singer AJ, Taira BR, Chohan J, Cardoz H, Chisena E, et al. Validation of the Wong-Baker FACES Pain Rating Scale in pediatric emergency department patients. Academic Emergency Medicine. 2010; 17: 50-54.

18. Hla K, Hegarty M, Russell P, Drake-Brockman TF, Ramgolam A, Von Ungern-Sternberg A. Perception of pediatric pain: A comparison of postoperative pain assessments between child, parent, nurse, and independent observer. Paediatr Anaesth. 2014; 24: 1127-1131.

19. Hill Stratton C. Guidelines for treatment of cancer pain: The revised pocket edition of the final report of the Texas Cancer Council's Workgroup on Pain Control in Cancer Patients. 1997; 2.

20. Chambers CT, Giesbrecht K, Craig KD, Bennett SM, Huntsman E. A comparison of faces scales for the measurement of pediatric pain: Children's and parents' ratings. Pain. 1999; 83: 25-35.

21. Tomlinson D, Von Baeyer CL, Stinson JN, Sung L. A systematic review of faces scales for the self-report of pain intensity in children. Pediatrics. 2010; 126: 1168-1198.

22. Newman CJ, Lolekha R, Limkittikul K, Luangxay K, Chotpitayasunondh T, Chanthavanich P. A comparison of pain scales in Thai children. Arch Dis Child. 2005; 90: 269-270.

23. Zisk RY, Grey M, Medoff-Cooper B, Kain ZN. Accuracy of parental-global-impression of children's acute pain. Pain Management Nursing. 2007; 8: 72-76.

24. Sutters KA, Levine JA, Dibble S, Savedra M, Miaskowski C. Analgesic efficacy and safety of single-dose intramuscular ketorolac for postoperative pain management in children following tonsillectomy. Pain. 1995; 61: 145-153.

25. Bennie RE, Boehringer LA, Dierdorf SF, Hanna MP, Means LYNJ. Transnasal Butorphanol is effective for postoperative pain relief in children undergoing myringotomy. Anesthesiology. 1998; 89: 385-390.

26. Bolton P, Bridge HS, Montgomery CJ, Merrick PM. The analgesic efficacy of preoperative high dose (40 mg x kg (-1)) oral acetaminophen after bilateral myringtomy and tube insertion in children. Paediatr Anaesth. 2002; 12: 29-35.

27. McGrath PJ. Behavioral measures of pain. In: Measurement of pain in infants and children: Progress in pain research and management (vol. 10) Finley GA, McGrath PJ (eds). Seattle, WA: IASP Press. 1998; 83-102.

28. Beyer JE, Aradine CR. Patterns of pediatric pain intensity: A methodological investigation of a self-report scale. The Clinical Journal of Pain. 1987; 3: 130-141.

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