RELIABILITY OF PAIN ASSESSMENT BY PARENTS AND ATTENDING EMERGENCY MEDICAL OFFICERS OF PEDIATRIC PATIENTS PRESENTING WITH ACUTE PAIN AT EMERGENCY DEPARTMENT HOSPITAL UNIVERSITI SAINS MALAYSIA KUBANG KERIAN, KELANTAN

By

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TABLE OF CONTENTS

LIST OF ABBREVIATIONS

EDMO	:	Emergency Department Medical Officer
GCS	:	Glascow Coma Scale
PSA	:	Procedural Sedation and Analgesia

LIST OF TABLES

LIST OF FIGURES

ABSTRAK

KESAMAAN PENILAIAN TAHAP KESAKITAN PESAKIT PEDIATRIK YANG HADIR KE JABATAN KECEMASAN HOSPITAL UNIVERSITI SAINS MALAYSIA, KUBANG KERIAN, KELANTAN DENGAN ADUAN KESAKITAN YANG AKUT OLEH IBUBAPA DAN PEGAWAI PERUBATAN KECEMASAN YANG MERAWAT.

Penilaian tahap kesakitan merupakan asas kepada rawatan analgesia yang berkesan. Ini adalah tahap kesakitan merupakan perasaan yang bersifat individualistik.

Objektif kajian ini adalah untuk menilai kesamaan penilaan tahap kesakitan yang dialami oleh pesakit pediatrik antara pesakit sendiri, ibubapa atau penjaga yang menemaninya dan pegawai perubatan kecemasan yang merawatnya.

Kajian dijalankan secara 'cross-sectional' dijalankan di Jabatan Kecemasan Hospital Universiti Sains Malaysia antara Ogos 2006 sehingga Ogos 2007. Pesakit pediatrik berusia antara 5 hingga 15 tahun yang mengadu kesakitan samada disebabkan kecederaan atau masalah perubatan dimasukkan ke dalam kajian. Pesakit diminta menilai tahap kesakitan sendiri menggunakan Skala Analog Visual atau 'Revised Faces Pain Scale'. Ibubapa atau penjaga yang menemani mereka dan pegawai perubatan kecemasan yang merawat juga diminta menilai tahap kesakitan yang dialami oleh pesakit tersebut menggunakan Skala Analog Visual.

Seramai 118 pesakit pediatrik dimasukkan ke dalam kajian. Purata markah penilaian tahap kesakitan secara yang diberikan sendiri oleh pesakit adalah 5.6 (SD± 2.7). Purata nilai tahap kesakitan yang dinilai oleh ibubapa atau penjaga adalah 5.3 (SD± 2.16) dan yang dinilai oleh pegawai perubatan kecemasan yang merawat adalah 4.5 (SD± 2.19). Ujian kesamaan penilaian tahap kesakitan antara ibubapa atau penjaga berbanding dengan pesakit pediatrik sendiri

memberikan nilai Kappa 0.16. Sementara nilai Kappa yang diperolehi daripada penilaian pegawai perubatan yang merawat pula adalah 0.11.

Hasil kajian ini mendapati bahawa penilaian tahap kesakitan pesakit pediatrik oleh ibubapa atau penjaga dan pegawai perubatan kecemasan yang merawat mempunyai nilai kesamaan yang rendah berbanding dengan penilaian oleh pesakit sendiri. Tahap kesamaan bertambah baik di kalangan pesakit pediatrik berumur 10 tahun ke atas dan kesakitan mereka berpunca daripada kecederaan.

ABSTRACT

RELIABILITY OF PAIN ASSESSMENT BY PARENTS AND ATTENDING EMERGENCY MEDICAL OFFICERS FOR PEDIATRIC PATIENTS PRESENTING WITH ACUTE PAIN AT EMERGENCY DEPARTMENT HOSPITAL UNIVERSITI SAINS MALAYSIA, KUBANG KERIAN, KELANTAN

Pain assessment is the first step towards effective analgesic methods. This is because pain is an individualized sensation and emotion.

Objective of this study is to assess the agreement of pain severity assessment done by parents or guardians and attending emergency medical officers in a child in terms of inter-rater agreement between parents or guardians, attending EDMO and respective child-patients in pain.

This is a single centre cross-sectional study carried out from August 2006 till August 2007 in Emergency Department Hospital Universiti Sains Malaysia. Children between the age of 5 till 15 years old with complaint of acute pain from either trauma or medical causes were enrolled. They were administered either Faces Pain Scale - Revised or Visual Analog Scale for self assessment of pain. Their accompanying parents or guardians and attending Emergency Medical Officers (EDMO) blinded to one another were given Visual Analog Scale to assess respective child-patients pain. The scores obtained was then analyzed to obtain the Kappa value for agreement between the self assessments by the child-patients with that of parents or guardians and attending EDMOs.

A total of 118 child-patients were recruited from August 2006 to August 2007. Mean pain score by child-patients is 5.6 (SD ±2.7). Mean pain score by parents or guardians was 5.3(SD ±2.16) and by attending EDMO 4.5 with (SD ±2.19). Kappa value of agreement between pain

assessment by parents or guardians with respective child is 0.16 and that between attending EDMO with respective child-patient is 0.11.

The study showed that both accompanying parents or guardians and attending EDMOs have poor level of agreement in severity of pain assessment compared to self assessment by respective child-patients. The level of agreement is good in children above 10 years of age and with trauma-related pain.

1. INTRODUCTION

A Case illustration

A 6 year-old boy was brought into the emergency department treatment room accompanied by his mother. He was wearing a triangular arm sling on his right hand and was supporting it tenderly with his left hand even though the sling was properly put on. Accompanying him was his mother looking stern but able to smile to the young emergency doctor attending to the case.

On his way back from religious school in the evening this child entered the house gate via his usual way climbing over it instead of opening it. The gate was only about four feet high. Unluckily for him that day not only did he tear his trousers at the usual midline, he accidentally lost his balance and fell onto his right hand. Thus his visit to emergency department, explained his mother.

Examining the child and looking at the deformity at the midshaft of his forearm, the young doctor decided that the child might require additional analgesia besides the sling to help with the pain and handling during imaging. He turned to the mother and asked her if the child was in a lot of pain when she saw him and during the journey to the hospital. The mother answered maybe not, as being hyperactive and playful falling and hurting himself is almost a routine.

The young doctor smiled remembering his own childhood experience. He then looked at the child and the mother, and he then remembered another thing. He took put a plastic ruler used as a bookmark from his book on the table and approached the child. The child put up a brave look. The young doctor smiled and spoke to the child in a soft voice as if his question was a secret only for the two of them ...

The above case illustration is a common scenario in Emergency Department. Pain either from trauma or medical etiology is one of the most common symptoms leading to an Emergency Department visit. It is a complex symptom to understand as defined by the American Society of Anesthesiology "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (McCaffery & Pasero, 1999; Paris & Yealy, 2006).

Regardless of the etiology, in the presence of pain, analgesia either immediate or gradual is expected by the patient. Knowledge in methods of analgesia is an important armament for any emergency practitioner. It is not a simple skill to acquire.

In provision of analgesia not only the underlying disease process causing the actual or potential tissue damage is important but the patient's individualized emotion and sensation of the pain must also not be forgotten. Many emergency practitioners err by managing pain from the etiology perspective rather than subjectively as an individualized sensation that is different from patient to patient regardless of its etiology. The error is so common that the term oligoanalgesia which refers to the underuse of analgesia methods in the emergency department (Wilson & Pendleton, 1989) was introduced in the medical literature.

Realizing the importance of pain management and the underutilization of analgesia in emergency departments, pain itself has been adopted as the fifth vital sign in patient assessment. Not only it is assessed at the triage level but also anticipated in patients undergoing any procedure in the Emergency Department via PSA protocols (Paris & Yealy, 2006).

Oligoanalgesia is more common among the pediatric population (Alexander & Manno, 2003). Causes for inadequate analgesia in pediatric population are mainly due to communication barrier between practitioners and the very young child, poor pain assessment by the practitioner and lack of experience of practitioners (Maurice *et al.*, 2002).

Pain assessment is an important aspect in pain management (Joint Commission on Accreditation of Healthcare Organizations, 2003). This is due to the fact that pain is an individualized sensation that differs among patients regardless of the etiology. Communication barrier and experience makes pain assessment more challenging in the pediatric population.

How does one provide adequate analgesia in children when assessing pain itself is challenging. Many studies have been done to assess and validate pain assessment tools for pediatric population of all ages. A child above the age of 2 may be able to provide some information regarding severity of pain (American Academy of Pediatrics, 2001).

Pain assessment even when performed; may still lead to the emergency practitioner to underestimate a child's pain (Ducharme, 1994). In the presence of such communication limitation and inexperience of the emergency practitioner in utilizing pain assessment tool, can we adequately gauge the severity of pain of a child? Are our past pain experiences and clinical knowledge adequate? Or maybe the parents or guardians of a child could better assess pain in their child. Time spent with the child and the affection between the parents or guardians with the child-patients may make them better assessors. The scope of this study is only to assess the level of agreement

in pain assessment between the child-patient with that by parents or guardians and the attending EDMOs. Hopefully the study results could provide useful information in developing an effective and efficient pain management protocol for pediatric patients.

2. LITERATURE REVIEW

2.1. DEFINITION OF PAIN

There are two definitions of pain (Joint Commission on Accreditation of Healthcare Organizations, 2003). The first defines pain as 'whatever the experiencing person says it is, existing whenever he says it does' (McCaffery & Pasero, 1999). The second definition which is widely accepted is 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (McCaffery & Pasero, 1999). The International Association for the Study of Pain describes the subjectivity of pain and that it is learned through experiences related to injury in early life.

The definition of pain above will later be seen to pose some problems in children of preverbal age and early life without previous exposure to injury and also in individuals with cognitive impairment (Franck *et al.*, 2000). Therefore, the definition may be broadened to include some behavioral and physiologic indicators of pain that can be inferred by others (Franck *et al.*, 2000).

2.2. PHYSIOLOGY OF PAIN

Pain perception is a two-step mechanism which first involves transduction and transmission and second, perception and modulation (Franck *et al.*, 2000).

Pain occurs after stimulation of specific nerve endings or nociceptors. The noxious stimuli may be in the form of mechanical, thermal or chemical stimuli.

The stimuli are conducted via two types of afferent nociceptor fibers; the fast thin myelinated Aδ-fibers and the slow unmyelinated C-fibers.

The characteristics of Aδ-fibers cause the pain transmitted be perceived as sharp and well-localized pain, whereas the C-fibers result in dull-aching and diffused pain.

Both fibers enter the spinal cord via the dorsal root and synapse at the dorsal horn. The impulse then travels via the spinothalamic, spinoreticular and spinomesoencephalic tracts to be widely distributed within the cerebral cortex. There is no single pain center (Franck *et al.*, 2000). This wide neuromatrix distribution leads to the complexity and unique perception of pain and pain-related distress for each individual.

2.3. PSYCHOLOGY OF PAIN

Emotions are processed in the limbic system. Impulse of pain is widely distributed throughout the cerebral cortex (Franck *et al.*, 2000) and it is at the anterior cingulated gyrus and right ventral prefrontal cortex that the emotion response of pain is triggered (Hansen & Streltzer, 2005).

Many psychological factors may influence the emotional response of pain such the nature of the pain, attention given to the pain, anxiety associated to its presence, memory and also expectation (Hansen & Streltzer, 2005). It explains the role of distraction and antidepressant on pain management (Paris & Yealy, 2006).

2.4. MODULATION OF PAIN

Based on the physiology of pain transmission, pain can be modified at several levels from the spinal cord to central modification.

Ascending modulation may occur at the spinal cord level where the impulse may be amplified with the release of inflammatory mediators from the surrounding tissues that either sensitize the afferent fibers or recruit other silent nociceptors resulting in hyperalgesia. It may also be inhibited via slow threshold impulses such as non-painful touch, pressure and vibration. This explains the analgesic role of massage and transcutaneous nerve stimulation.

Descending modulation occurs with the release of inhibitory neurotransmitter from efferent projections of supraspinal areas (Franck *et al.*, 2000).

2.5. PAIN MANAGEMENT

Pain management involves acknowledgement that the patient is experiencing pain, assessing its severity and administering proper intervention to relieve the unpleasant sensation felt by the patient. It does not just end with the prescription of an analgesic method but must be followed by an assessment of its effectiveness (Joint Commission on Accreditation of Healthcare Organizations, 2003).

2.5.1. ACKNOWLEDGEMENT OF ITS PRESENCE

The two definitions of pain define pain as having an individualistic meaning in each person, making it difficult to describe and hard to