Assessing Patient Pain Scores in the Emergency Department

Kamarul Aryffin Baharuddin¹, Nasir Mohamad¹, Nik Hisamuddin Nik Abdul Rahman¹, Rashidi Ahmad¹, Nik Ahmad Shaiffudin Nik Him²

¹ Department of Emergency Medicine, Hospital Universiti Sains Malaysia, Jalan Raja Perempuan Zainab II, 16150 Kubang Kerian, Kelantan, Malaysia
² Emergency Department, Hospital Kuala Lumpur, Jalan Pahang, 50586 Kuala Lumpur, Malaysia

Abstract

Background: Pain management in the Emergency Department is challenging. Do we need to ask patients specifically about their pain scores, or does our observational scoring suffice? The objective of this study was to determine the inter-rater differences in pain scores between patients and emergency healthcare (EHC) providers. Pain scores upon discharge or prior to ward admission were also determined.

Methods: A prospective study was conducted in which patients independently rated their pain scores at primary triage; EHC providers (triagers and doctors) separately rated the patients’ pain scores, based on their observations.

Results: The mean patient pain score on arrival was 6.8 ± 1.6, whereas those estimated by doctors and triagers were 5.6 ± 1.8 and 4.3 ± 1.9, respectively. There were significant differences among patients, triagers and doctors (P< 0.001). There were five conditions (soft tissue injury, headache, abdominal pain, fracture and abscess/cellulites) that were significantly different in pain scores between patients and EHC providers (P<0.005). The mean pain score of patients upon discharge or admission to the ward was 3.3 ± 1.9.

Conclusions: There were significant differences in mean patient pain scores on arrival, compared to those of doctors and triagers. Thus, asking for pain scores is a very important step towards comprehensive pain management in emergency medicine.

Keywords: emergency medicine, pain assessment, pain management, pain score, neurosciences

Introduction

Pain is a complex phenomenon in which an individual’s response is determined by the interactions of physical, psychological, cultural and sociodemographic factors (1). Pain itself is one of the most common presenting complaints in the Emergency Department (ED) (2). Pain assessment is of prime importance because it helps to determine the appropriate type of analgesia to administer and the urgency of the pain relief needed (3). Its contribution to improvements in patient satisfaction is also well-established (4).

Many studies have shown that assumptions about patient pain intensity are inaccurate in many settings, and documentation of pain assessment has improved pain management (5,6). Encouraging patients to communicate about their pain is also part of pain management (7). However, the assessment and management of pain in the ED is difficult and is a constant challenge to emergency healthcare providers, including emergency physicians (8).

There are currently several reliable, valid pain assessment tools or pain scores available for use with adult patients in the acute pain setting. Although multidimensional pain scales are excellent, it can take up to 45 minutes to fully complete the questionnaires, rendering them impractical and cumbersome in the emergency setting (9). Therefore, a numeric rating scale (NRS) was used in this study, as the advantages include ease of administration and scoring, multiple response options and no age-related difficulties (Figure 1) (10). The words ‘no pain’ and ‘worst possible pain’ comprised the 0 and 10 ends of the scale, respectively.

In Malaysia, the development of comprehensive emergency medical and trauma services is still in process. Most government hospital EDs are staffed by junior doctors with no postgraduate training or qualifications. Therefore, pain assessment and management are largely
based on limited personal experience, as well as
on the experiences of senior physicians.

The first step for pain management is to
identify the patient who is in pain, so that the
appropriate management can be delivered quickly.
Do we need to ask patients specifically about their
pain scores or do our observational scores suffice?
The objective of this study was to determine the
difference in pain scores between patients and
emergency healthcare (EHC) providers. Pain
scores upon discharge or prior to ward admission
were also to be measured.

Materials and methods

A cross-sectional study was conducted from
September, 2004 to October, 2004 on varied
shifts and days, based on convenience sampling in
the ED of the Hospital Kuala Lumpur (HKL). ED
HKL was a busy government hospital that receives
an average of 650 to 700 patients per day and is
managed by five to six medical officers per eight-
hour shift. Ethical approval was obtained from
the Universiti Sains Malaysia (USM), Human
Ethics Committee, as the researchers were from
USM. Adult patients (age 18 years or older) with
acute pain who presented to the ED HKL were
included. Head injury cases with Glasgow Coma
Scale ratings less than 15/15, intoxicated patients,
haemodynamically unstable, significant language
barrier, in a pain state of more than 72 hours, or
were on any type of analgesia within the preceding
four hours were excluded.

All patients provided informed consent
prior to their participation in this study. Patients
were given a formatted form and were asking to
rate their pain scores after primary triage. Upon
discharged to home or admission to the ward, the
patient pain scores were assessed by the managing
physicians. A horizontal 0 to 10 NRS was used to
measure the pain score. Pain severity was defined
in the following manner: mild, 1–4; moderate,
5–7; and severe, 8–10.

The EHC providers would rate the patients’
pain scores at the same time at the primary
triage. The EHC providers were doctors and
trigers. In our hospital, trigers were nurses or
medical assistances with more than five years
of experience working in the ED. Pain scores of
the patients, doctors and trigers were obtained
independently and blindly. At no time were the
research personnel allowed to intervene in the
patients’ management. As there were no proper
guidelines for acute pain management in the
ED, pain management depended on doctors’
professional experiences.

Based on the data collected, the chief
complaint or diagnosis of the patients was divided
into eight categories. It consists of soft tissue
injury (STI), musculoskeletal pain (such as back
pain), headaches, abdominal pains, abscesses or
cellulitis, ischaemic heart disease (IHD), fractures
and foreign bodies. The data were collected and
analysed using SPSS (Version 12). T-tests were
used to analyse the differences in pain score
severity between patients and EHC providers. The
non-parametric Wilcoxon Signed-Rank Test was
used to compare the difference between patient
and EHC provider pain scores based on the chief
complaint/diagnosis. The patients’ pain scores
were considered as a reference.

Results

A total of 107 patients were enrolled in this
study. However, 20 patients had to withdraw from
the study due to inadequate pain score data upon
discharged or ward admission. Thus, there were
87 patients, of whom 56 (64.4%) were male and 31
(35.6%) were female. Among the male patients, 2
(3.6%), 39 (70%) and 15 (26.4%) were having mild,
moderate and severe pain, respectively. Among
the female patients, 21 (67.7%) and 10 (32.3%) of
them were having moderate and severe pain. None
of the female patients reported having mild pain.
There was no statistical significant difference in
pain severity scores between genders.

The mean age was 38.4 ± 11.3 years old; the
range was from 19 to 65 years old. Patients of
Malay ethnicity (46.0%) formed the majority of
the study population, followed by Indian (39.1%) and
Chinese (14.9%) patients. Most of patients
presented with moderate pain (69%), followed by
severe pain (28.7%). Upon discharge to the home
or admission to the ward, the majority of patients
were experiencing mild pain (51.7%), and almost
half of them were having moderate pain (44.8%) (Table 1). The mean pain score of patients on arrival was 6.8 ± 1.6, whereas the mean pain scores of doctors and triagers were 5.6±1.8 and 4.3 ± 1.9, respectively. The mean differences between patients and doctors were 1.2 ± 1.6 and 2.5 ± 1.7 (Table 2). Paired t–tests showed significant differences between patients, triagers and doctors. The mean pain score of patients upon discharge or admission to the ward was 3.3 ± 1.9.

There were significant differences between patients’ pain scores and EHC providers’ pain scores in relation to the chief complaint or diagnosis (Table 3 and 4). There were five conditions—STI, headache, abdominal pain, fracture and abscess/cellulites—that were related to significant differences in pain scores. Both doctors and triagers were underscoring these diagnoses.

Discussion

Patients with pain comprise 60–70% of ED visits (11). It is a well-accepted fact that pain is an individual experience and should be established by the individual’s self-report of pain (7). The Joint Commission on Accreditation of Healthcare Organisation (JCAHO) guidelines recommend the use of a pain score appropriate to the patient population to measure the intensity of a patient’s pain and to practice proper documentation. For adult populations, the JCAHO recommended the use of the ten-point NRS (12).

Good assessment and documentation lead to good pain management (12, 13). Good documentation should cover the initial and subsequent assessment (14). In our study, there were 20 patients who were withdrawn from the study due to no documentation of the pain score upon discharge or at ward admission. Poor documentation of subsequent pain assessments also occurs in developed countries (14).

The majority of the patients were male. Although there was no statistical significant difference in pain severity scores by gender, a higher percentage of female patients experienced severe pain, and none were experiencing mild pain. These data are consistent with current human findings regarding sex differences in the perception of experimental pain that indicate greater pain sensitivity among females compared to males (15). However, other research examining subjects in Singapore showed that the median pain score was not affected by gender (16).

People of the Malay ethnicity comprised the majority of the study population followed by the Indian and Chinese ethnicities. This ethnic distribution was not representative of the general Malaysian population (17), suggesting that financial constraint might have been a factor. HKL is a busy government hospital with minimum charges. With a charge of RM 1, all the hospital costs were covered, including consultations,

<table>
<thead>
<tr>
<th>Table 1: Frequency and percentage of patients’ pain scores by severity on arrival and upon discharge/ward admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Severity (NRS)</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>Mild (1–4)</td>
</tr>
<tr>
<td>Moderate (5–7)</td>
</tr>
<tr>
<td>Severe (8–10)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2: Result of paired t-tests between patients’ vs. doctors’ pain scores and patients’ vs. triagers’ pain scores on arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paired Differences</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Patients’ vs. Doctors’ pain scores</td>
</tr>
<tr>
<td>Patients’ vs. Triagers pain scores</td>
</tr>
</tbody>
</table>
medications and even CT scans.

Most of the patients presented with moderate pain, followed by severe and mild pain. Upon discharge to home or ward admission, only 3.4% of the patients were experiencing no pain. Yet, 44.8% of them were experiencing moderate pain, and none were experiencing severe pain. This is comparable with another local study that reported 14.3% and 33.3% of patients having severe and moderate pain upon discharge, respectively (18). This figure is suggestive of the clinical significance of pain undertreatment among our patients.

There is cause for concern in this scenario. The doctors anecdotally revealed that their major concern was in treating acute life-threatening conditions. Pain was considered as a minor condition and therefore less attention was thought to be needed. Another reason for this under-treatment of pain was ED overcrowding. ED overcrowding was a known independent factor for the undertreatment of pain (19). When the ED gets busy, staff may be less responsive to the needs of individual patients, and as a result, patients have a higher likelihood of experiencing delays in treatment and inadequate pain relief.

We detected a significant difference in pain scores among patients and EHC providers. We also found comparable results of greater underscoring by the triagers than by the doctors (6). A potential reason for this condition was that the teaching and training of pain management during the undergraduate level in medical school was inadequate (20); thus the highest education level for triager was a diploma. Pain assessment and management were among the least important skills for them during their three-year course.

To look for possible factors that might account for the observed results, we examined differences based on the chief complaints. There were five conditions (soft tissue injury, headache, abdominal pain, fracture and abscess/cellulitis) that were significantly different in pain score between the patients and EHC providers. Other conditions, such as musculoskeletal pain, ischaemic heart disease (IHD) and foreign bodies (FB), showed no significant difference in pain

<table>
<thead>
<tr>
<th>Chief complaint/ Diagnosis</th>
<th>n (%)</th>
<th>z</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft tissue injury</td>
<td>30 (34.5)</td>
<td>-3.87</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Headache</td>
<td>4 (4.6)</td>
<td>-2.00</td>
<td>0.046</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>4 (4.6)</td>
<td>-1.89</td>
<td>0.059</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>23 (26.4)</td>
<td>-2.20</td>
<td>0.028</td>
</tr>
<tr>
<td>Ischaemic Heart Disease</td>
<td>5 (5.7)</td>
<td>-1.41</td>
<td>0.157</td>
</tr>
<tr>
<td>Fracture</td>
<td>13 (15.0)</td>
<td>-3.11</td>
<td>0.002</td>
</tr>
<tr>
<td>Abscess/cellulitis</td>
<td>6 (6.9)</td>
<td>-2.23</td>
<td>0.026</td>
</tr>
<tr>
<td>Foreign body</td>
<td>2 (2.3)</td>
<td>1.41</td>
<td>0.157</td>
</tr>
</tbody>
</table>

Table 3: Result of Wilcoxon Signed-Ranks Test comparing the differences between patients’ and doctors’ pain scores based on chief complaint/ diagnosis
score. A potential reason for this was due to the small numbers of patients having those chief complaints.

Conclusions

There were significant differences between patients' mean pain scores on arrival, compared to those of doctors and triagers. Clinical conditions that had significant differences in pain assessment were soft tissue injury, headache, abdominal pain, fracture and abscess/cellulites. It is obvious that more needs to be done for patients who present to the ED with pain. EHC providers need to be educated regarding pain assessment and pain management while not compromising the ED's task of treating emergent, life-threatening conditions.

Introducing pain as a fifth vital sign, along with blood pressure, pulse rate, respiratory rate and temperature, is a method to improve pain management. It also allows EHC providers to reassess patients’ pain scores sequentially to evaluate the effectiveness of the ED’s pain management. Thus, asking for pain scores is a very important step toward excellent and comprehensive pain management in Emergency Medicine.

Author's contributions

Conception and design, KAB, NASNH, NM
Data-collection, assembly, analysis and interpretation: KAB, NASNH
Provision of study materials or patients: NASNH
Drafting of the article: KAB
Critical revision of article: NM
Final approval of the article: RA, NHNAR
Statistical expertise: RA

Correspondence

Dr Kamarul Aryffin Baharuddin
MD, MMed (Emerg) (USM)
Department of Emergency Medicine
Hospital Universiti Sains Malaysia
Jalan Raja Perempuan Zainab II
16150 Kubang Kerian
Kelantan, Malaysia
Tel: +6017-988 7300
Fax: +609-766 3244
E-mail: amararyff@kb.usm.my

References


