ADHERENCE TO TRIAGE PAIN SCORING AT EMERGENCY DEPARTMENT OF HOSPITAL UNIVERSITI SAINS MALAYSIA

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TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF ABBREVIATIONS

AMO	Assistant Medical Officer
APS	American Pain Society
DBP	Diastolic Blood Pressure
ED	Emergency Department
HUSM	Hospital University Sains Malaysia
JCAHO	Joint Commission on Accreditation Health Organizations
MA	Medical Assisstant
NRS	Numeric Rating Scale
SBP	Systolic Blood Pressure
SN	Staff nurse

ABSTRAK (BAHASA MELAYU)

KEPATUHAN TERHADAP PENILAIAN TAHAP KESAKITAN DI TRIAGE JABATAN KECEMASAN HOSPITAL UNIVERSITI SAINS MALAYSIA

Pengenalan: Tujuan kajian ini adalah untuk menentukan tahap kepatuhan terhadap penilaian tahap kesakitan di triage, melalui dokumentasi oleh staf jabatan kecemasan di Jabatan Kecemasan HUSM dan untuk menentukan faktor-faktor yang berkaitan yang mempengaruhi kepatuhan kepada tahap kesakitan triage, supaya tindakan boleh dibuat kemudian hari untuk meningkatkan mutu perkhidmatan jabatan kecemasan dalam menilai kesakitan dan menyediakan rawatan segera kepada pesakit pada masa akan datang.

Metodologi : Kajian ini adalah satu kajian dalam tempoh enam bulan dari Julai 2014 hingga Disember 2014. Sebanyak 334 sampel dimasukkan ke dalam kajian. Maklumat yang diperoleh daripada kertas triage daripada pesakit dewasa yang datang ke Jabatan Kecemasan kerana kesakitan, dan maklumat kakitangan yang memenuhi kriteria telah didokumen pada kepingan pengumpulan data. Semua data telah dianalisis menggunakan analisis deskriptif, dan multi-regresi logistik.

Keputusan : Daripada 334, hanya 94 (28.1%) sampel menunjukkan kepatuhan terhadap dokumentasi tahap kesakitan, manakala baki 240 pesakit (71.9%) menunjukkan ketidakpatuhan kepada dokumentasi tahp kesakitan. SN mempunyai kira-kira 4 kali lebih cenderung berbanding AMO dalam mematuhi dokumentasi tahap kesakitan(95% CI:. 2.11,

7.03 p-value = <0.001). Apabila bilangan pesakit meningkat sebanyak 1, kakitangan triage di jabatan kecemasan mempunyai kira-kira 1 kali kurang berkemungkinan untuk mematuhi dokumentasi tahap kesakitan(95% CI:. 0.96, 0.99 p-value = <0.001). Apabila sistolik BP pesakit meningkat sebanyak 1mm / Hg, kakitangan triage mempunyai kira-kira 1 kali kurang berkemungkinan untuk mematuhi dokumentasi tahap kesakitan (95% CI: 0,976, 0.99 p-value = 0.004.). Sakit abdomen mempunyai 4 kali ganda berbanding dengan trauma, untuk kakitangan triage mematuhi dokumentasi tahap kesakitan(95% CI: 2.17, 8.44 p-value = <0.001.). Sakit belakang juga mempunyai 4 kali ganda berbanding dengan trauma, untuk kakitangan triage di jabatan kecemasan mematuhi dokumentasi tahap kesakitan(95% CI: 1.43, 9.71). p-value = 0.007).

Kesimpulan : Tahap kepatuhan terhadap dokumentasi penilaian tahap kesakitan di triage Jabatan Kecemasan HUSM dalam tempoh kajian adalah sangat sedikit. Faktor-faktor yang mempengaruhi kepatuhan terhadap dokumentasi tahap kesakitan di triage HUSM adalah jawatan kakitangan, jumlah pesakit bagi setiap syif, tekanan darah sistolik dan bahagian kesakitan.

ABSTRACT

ADHERENCE TO TRIAGE PAIN SCORING AT EMERGENCY DEPARTMENT OF HOSPITAL UNIVERSITI SAINS MALAYSIA

Introduction: The aim of this study was to determine the level of adherence to triage pain scoring documentation at ED HUSM and to determine the associated factors that influence the adherence to triage pain score, so that actions can be made later to improve emergency services on evaluating pain and providing immediate analgesia to the patients in the future.

Methodology: This study was a cross sectional study of a six months period from July 2014 until December 2014. A total of 334 samples included in the study. Information obtained from triage paper of those adult patients presented in pain and staffs who fulfil the inclusion criteria were documented on data collection sheets. All data were analysed using descriptive analysis, simple logistic regression and multiple logistic regression.

Results: Out of 334, only 94 (28.1%) sample showed adherence to documentation of pain score, while remaining 240 patients (71.9%) showed non adherence to triage pain score documentation. SN has about 4 times more likely compared to AMO to adhere to pain score documentation (95% CI : 2.11, 7.03. p-value = <0.001). When number of patient increase by 1, ED triage staffs have about 1 time less likely to be adhered to pain score documentation (95% CI : 0.96, 0.99. p-value = <0.001). When systolic BP of patient increase by 1mm/Hg, ED triage staffs have about 1 time less likely to be adhered to pain score documentation

(95% CI : 0.976, 0.99. p-value = 0.004). Abdominal pain has 4 times more likely compared to trauma or limb pain, for ED triage staffs to adhere to pain score documentation (95% CI : 2.17, 8.44. p-value = <0.001). Back pain has 4 times more likely compared to trauma or limb pain, for ED triage staffs to adhere to pain documentation (95% CI : 1.43, 9.71). p-value = 0.007).

Conclusion: There was poor adherence to triage pain score documentation at ED HUSM during the study period. Factors that influence the adherence to triage pain score documentation were position of staff, number of patients per shift, SBP, and sites of pain.

CHAPTER 1 : INTRODUCTION

Pain is unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage as defined by International Association for the Study of Pain in 1986. Pain is the most common reason for presentation to the emergency department (ED), and it has been established that more than 70% of patients present with pain as their main symptom (Ducharme *et al.*, 2008). According to the 2004 National Hospital Ambulatory Medical Care Survey data, approximately 32% of emergency department (ED) patients presented with either moderate or severe pain (Middleton KR, 2006). Studies have reported that 60%-80% of patients in pain are often undertreated (Pines and Hollander, 2008). In view of the impact that pain makes on patients, emergency department doctors and staffs need to be well versed in pain management, especially in its acute presentation. In recent years, there has been a commendable focus on patient-centred medicine, with increasing attention being paid to the timely assessment and management of acute pain. The severity of which is used to determine clinical priority at triage (Body and Foex, 2012).

Relieving pain is one of the oldest and most basic principles of medicine. Despite an increasingly scientific understanding of pain and the availability of effective analgesics, inadequate pain relief is common for patients in the ED. Poor understanding of patient expectations for pain relief may contribute to poor analgesia in the ED. In addition, patient expectations for pain relief may play an important role in the

development of standardized outcomes measures for pain relief in the ED setting. ED patients have high expectations for pain relief. Patients with pain reported a mean expectation for pain relief of 72% with 18 % of patients expecting complete relief of their pain. Factors such as previous pain experience and prior treatment of pain in an ED or other medical setting that may influence patient expectations for pain relief are deserving of further study. Age has been shown to influence patient perceptions of pain and may have an impact on patient expectations for pain relief in the ED (Fosnocht *et al.*, 2004).

Unrelieved pain has significant functional and emotional consequences. The reasons why patients present to emergency room are due to unable to bear severe pain, decreased functional ability and activity, and sleep deprivation due to pain. Sleep is crucial to a sense of well-being and one of the physiological needs. All of these consequences of pain further diminish quality of life by isolating individuals from the society. It also doubled the functional and emotional losses due to undertreated pain. Patients expecting the medical personnel especially in ED will attend them as early as possible, assess their pain and deliver the appropriate analgesia. Recently, the Pain and Emergency Medicine Initiative study demonstrated that patient satisfaction was associated more with the way ED physicians responded to their symptoms of pain than to the actual result of pain treatment (Sokoloff *et al.*, 2014).

Early management of pain may help reduce the likelihood of an exaggerated inflammatory and stress response, may prevent intensification of the pain, prevent long-term chronic pain, and reduce the likelihood of the posttraumatic stress disorder. However, analgesics should be prescribed only for patients who desire them. The results of the current study indicate that roughly half of all ED patients in pain, even some with severe pain, do not want any analgesics while in the ED (Singer *et al.*, 2008b).

In 2004, a retrospective study was done to determine the effect of introducing a mandated verbal numeric pain scale on the incidence and timing of analgesic administration in the ED. The intervention consisted of the addition of a Joint Commission on Accreditation Health Organizations (JCAHO). the verbal numeric pain scale ranging from 0 (no pain) to 10 (worst possible pain) to the medical record was mandated at ED triage of a suburban university-based ED with an annual census of approximately 65,000 patient visits. The pain score was included in vital sign sections and was assessed at the same time as other vital signs. The study conclude that use of a pain scale at triage significantly increases use of analgesia, and shortens the time till its administration (Nelson *et al.*, 2004)

In order to improve pain management in acute presentation, pain assessment is crucial, followed by early appropriate analgesic and reassessment of pain. Pain intensity assessment plays a key role in the emergency department, in which it modulates the triage priority the prescription of analgesics, the incidence of pain relief and patient's

perception of general quality of care (Daoust *et al.*, 2008). Documentation of pain score at triage is one of important step in initial assessment. A study done in 2012 showed that median time to analgesia improved after 1 year after triage pain scoring become mandatory at emergency department in Royal Melbourne Hospital, Australia. That study was a prospective interventional study which was performed in the emergency department (ED) of an adult tertiary referral hospital and major trauma center. After an observational assessment of baseline time to analgesic administration, the recording of triage pain scores was mandated through computerized information system. In a second separate phase, the staff was educated on the importance of timely analgesia. Time to initial analgesia was measured after each phase and at 12-month follow-up. As a results, At 12-month follow-up, the median time to analgesia was 78 minutes, 45 minutes (36.4%) faster than at baseline. (Vazirani and Knott, 2012)

Based on above study, the results showed mandating pain scoring at triage reduces time to analgesia. No similar study had been done in Malaysia before. From general observation, as for research hypothesis, there will be poor adherence to triage pain scoring assessment and documentation in ED HUSM. Several factors that may influence poor adherence to triage pain scoring at ED HUSM will be different sites of pain, number of patients per shift, gender and position of the triage staffs, patients' vital signs and different triage zone.

According to Oxford dictionary, adherence is defined as attachment or commitment to a person, cause or belief. Adherence in this case is subjected to assessment of pain score on presentation to ED, using numeric rating scale and documentation of the score on triage paper by triagers.

Therefore, this study is done in Emergency Department(ED) of Hospital Universiti Sains Malaysia (HUSM) to determine the level of adherence to triage pain scoring at ED HUSM and to determine associated factors that influence the adherence to pain scoring at ED HUSM triage. Proper pain score documentation is important to alert the doctors and nurse that the patients might need early analgesia and need earl attention, Once the factors that influence the adherence to triage pain score documentation have been analysed, then proper actions could be implement later as one of the way to improve the emergency services in managing acute pain.

CHAPTER 2 : LITERATURE REVIEW

2.1 Pain as 5th vital sign

In 1995, the American Pain Society (APS) delineated that a first step in improving the treatment of pain is assessment and recording of patients' reports of pain and introduced the phrase "pain as the 5th vital sign." This initiative emphasizes that pain assessment is as important as assessment of the standard four vital signs and that clinicians need to take action when patients report pain. In 1999, the Veterans Health Administration initiated the measurement and documentation in the electronic medical record of patients' self-report of pain. The initiative called ''Pain as the 5th Vital Sign'' required use of a Numeric Rating Scale (NRS) for all clinical encounters (Richard A. Mularski and Lois Miller, 2006).

2.2 Numerical Rating Scale as pain score measurements

JCAHO standards do not specify how pain should be assessed; rather, they allow organizations to develop their own pain assessment policies. The pain numeric rating scale (NRS), on which patients rate their current pain intensity from 0 ("no pain") to 10 ("worst possible pain"), has become the most widely used instrument for pain screening (Erin E. Krebs, 2007).

There are several methods of pain score measurements. The strong correlation between the verbally administered NRS and the VAS (visual analog scale), the overall equivalence of the measures based on the regression analysis, the finding that agreement between them is almost the same as agreement between two VAS measurements taken 1 minute apart, and the nearly identical minimum clinically significant differences suggest that the NRS can be used to measure acute pain in clinical studies. Therefore, numerical rating scale is the most accurate and applicable in an adult ED setting, requiring patients to score their pain on a numeric scale between zero (no pain) and 10(most severe pain) (Bijur *et al.*, 2003)

The verbal numeric rating scale is commonly used to assess pain by self-report in EDs. Previous studies have demonstrated that both verbal numeric rating scales and visual analog scales are valid methods of measurement of self-reported pain(Holdgate *et al.*, 2003; Marco *et al.*, 2013). Numeric rating scale is the simplest and most universally used scale measuring pain intensity, and has been shown to be both valid and reliable in cognitively intact elderly individuals. However, there is conflicting literature relating to the use of this pain scale in cognitively impaired elderly patients (DeWaters *et al.*, 2003).

Although pain scales are powerful research tools, one study showed the relation between pain score and desire for analgesics. The study used NRS as method of pain

measurements. Their main benefit is in comparing therapies and for monitoring the response to analgesia. However, the absolute value and meaning of individual pain ratings can be subjective, with considerable variability between patients, according to demographic and cultural factors. The study demonstrated that pain scores correlated with the desire for and administration of analgesics. However, a minority of patients with high pain scores did not want analgesics, whereas a minority of patients with low pain scores did want analgesics. Thus, in addition to obtaining a pain score a practical approach would simply be to ask patients whether they are in pain and, if so, whether they want analgesics for their pain(Singer *et al.*, 2008a).

2.3 Barriers of pain management in ED

Several types of barriers to pain assessment and management have been reported and have been grouped into patient-related barriers, nurse-related barriers, physician-related barriers, and system-related barriers. Previous studies have also revealed that a lack of knowledge, inadequate pain assessment, and reluctance to administer opioids were important barriers for health care professionals providing optimal pain management (Decosterd *et al.*, 2007; Todd *et al.*, 2007). The barriers that preclude emergency physicians from proper pain management include ethnic and racial bias, gender bias, age bias, inadequate knowledge and formal training in acute pain management (Motov2 and Abu NGA Khan1, 2009). Gender bias may be a component of oligoanalgesia in the treatment of acute abdominal pain. Despite having similar pain

scores, women are less likely to receive analgesic treatment than men, particularly opiates, and wait longer for their medications (Chen *et al.*, 2008).

Other barriers in pain management as stated in another different literature were; lack of educational emphasis on pain management practices, inadequate or nonexistent clinical quality management programs that evaluate pain management; a paucity of rigorous studies of populations with special needs that improve pain management in the emergency department, clinicians' attitudes toward opioid analgesics that result in inappropriate diagnosis of drug-seeking behavior and inappropriate concern about addiction, even in patients who have obvious acutely painful conditions and request pain relief; inappropriate concerns about the safety of opioids compared with nonsteroidal anti-inflammatory drugs that result in their underuse (opiophobia); unappreciated cultural and sex differences in pain reporting by patients and interpretation of pain reporting by providers; and bias and disbelief of pain reporting according to racial and ethnic stereotyping (Todd, 2004). Despite the long lists of barriers in managing pain, this study will only emphasize on initial pain management particularly pain score assessment and documentation.

ED crowding is associated with poor quality of care in patients with severe pain, with respect to total lack of treatment and delay until treatment. ED crowding was associated with delays in analgesic treatment from the time of triage in patients

presenting with acute abdominal pain in ED. Efforts to reduce ED crowding may expedite pain management in adults with abdominal pain (Mills *et al.*, 2009).

One of the potential barriers to appropriate monitoring and treatment of pain is the lack of documentation that would prompt the health care advocate to administer an effective analgesic. Educational interventions may be used to facilitate documentation of patient's pain. Barriers to medical recording need to be addressed to improve the proficiency of the registered nurse in the emergency department. Performance measures are entwined with competency levels for health care workers and standards of care delivery. A continuous and ongoing effort to facilitate the best practice for patients is a major initiative without an endpoint (Jackson, 2010).

The Australian pain management audit done in 12 month period from June 2005 to June 2006 highlighted current practices and potential areas for further research. Seventy-four hospitals agreed to conduct the audit, 36 (48%) provided data. The total number of patient notes reviewed was 2,066. Ninety-five percent (1,966) of patients arrived by ambulance. Of the patients (n=547; 56.4%) with a documented triage pain score the majority arrived in severe pain (n=300; 41.3%). Of the total number of patients (1,966) documented arriving in pain 1,473 (74.9%) received an analgesic. Six hundred and forty-four (32.7%) patients received an opioid. From time of emergency department arrival, the median time for analgesic administration was 70 minutes (IQR 58 minutes to 92 minutes). Twenty-five emergency departments (69.4%) had pain

management policies that enabled nurses to initiate a pharmacological analgesia without medical consultation. The audit demonstrated that nurse initiated pain management interventions promoted better analgesic response, greater consistency of triage pain assessment, code allocation, and documentation of pain scores may go some way to improving the timeliness of analgesia (Fry *et al.*, 2011).

A study was done at ED of a university hospital in Sweden that serves approximately 56,000 patients annually. The aim was to describe initial nursing assessment related to pain management in ED and to identify predictors for receiving or not receiving analgesics in the emergency department. The sample consists of 100 patients from an intervention group in a previously undertaken Swedish intervention study. The main findings were that the registered nurses assessed 62 patients as being in need of analgesics, and that 52 of these obtained analgesics. Median value for pain intensity at initial assessment was 6 on the numerical rating scale. The results for the logistic regression (n ¼ 80) showed significant differences between receiving analgesics/ not receiving analgesics and the predictor pain intensity (measured at initial nurse assessment). Nurses in emergency departments play a crucial role, in that their initial assessment is of specific importance for the patient's further care and whether the patient may or may not receive analgesics. However, more attention has to be paid to patients' experiences and their expectations regarding the pain management in the emergency department (Muntlin Athlin *et al.*, 2015).

Inadequate pain management remains a major challenge for health care providers. Despite extensive research on the mechanisms of acute pain, identification of factors leading to poor pain management, and development of evidence-based strategies, the transfer of this knowledge into effective clinical practices has been surprisingly slow (Decosterd *et al.*, 2007). In order to compromised patient experience, sub-optimal treatment of pain will result in decreased department flow, increased waiting times, more return visits to the ED, and increased hospitalization rates(Chris Lipp, 2013).

2.4 Triage in ED

According to Oxford dictionary, triage is defined as the assignment of degrees of urgency to wounds or illnesses to decide the order of treatment in a large number of patients or casualties. It is an English use of a French word, from *trier* means 'separate out'. The medical sense dates from the 1030s, from the military system of assessing the wounded on battle field. Whereas, in Emergency department, triage zone is the area where patients are first seen, assessed and are sorted according to the severity of illness to three different zones (red, yellow and green zone). Vital signs of patients also to be recorded, together with patients' pain score if pain is the reason of visits.

A study done in EDs from across the United States and Canada was the first study to prospectively examine the relationship of arrival triage scores, triage systems,

and pain scores on delays to initial analgesic administration. Many patients in the study who were assigned lower-triage acuity levels reported high pain scores on arrival, independent of triage system or triage acuity level. Patients with severe pain could, and did, experience lengthy delays to administration of initial analgesic. Across all triage systems, 60% of patients received analgesics during their ED stay. This is consistent with prior studies and demonstrates a continued opportunity to improve analgesic management in the ED. They studied the relationship between arrival pain scores, the assignment of a triage score, and the timeliness of analgesic administration. The triage nurse is usually the first health care provider to assess pain among ED patients. Triage systems in the above states vary in their expectation of how pain scores impact selection of a triage scores. Normally, assignment of a lower priority triage score results in longer waits to evaluation by a physician (Ducharme *et al.*, 2008).

There were significant differences between patients' pain scores and Emergency Healthcare providers' pain scores in relation to the chief complaint or diagnosis as reported in one study done in HUSM and Hospital Kuala Lumpur, Malaysia. There were five conditions studied as soft tissue injury, headache, abdominal pain, fracture and abscess or cellulitis, that were related to significant differences in pain scores. Both doctors and triagers were underscoring these diagnoses (Kamarul Aryffin Baharuddin *et al.*, 2009).

Failure to manage the pain will cause further stress to the patients that will worsen the illness. Of the 2 million patients with suspected acute cardiac ischemia admitted to hospitals in the United States annually. Between 2% and 8%of patients

having an acute myocardial infarction are discharged mistakenly from the emergency department due to lack of pain assessment, resulting in adverse clinical outcomes for patients and costly malpractice judgments against emergency physicians. Triage sensitivity and specificity can be understood best in terms of safety and efficiency. A safe triage means admitting patients who will suffer life-threatening complications to intensive (or intermediate) care units. Triage safety thus depends on a highly sensitive prediction of such complications (Reilly et al., 2002). In order to achieve that, here comes the importance of assessing pain score, document the score and reassessment of pain after analgesia as part of the management.

2.5 Mandatory pain score at ED triage

Several guidelines, including American Colleague of Emergency Physician clinical policies on pain management, require the assessment of pain for all patients presenting to the ED and mandate that pain assessment be recorded in the medical record by using a pain scale, as stated by Joint Commission on the Accreditation of Healthcare Organizations on Revised Pain Management Standards in year 2000 (Phillips, 2000).

Pain severity scores appear to be underused in the ED setting, as concluded in one study done based on data from the ED component of the National Hospital Ambulatory Medical Care Survey in Washington, which was directed by the Centers for

Disease Control and Prevention's National Center for Health Statistics. The current literature on analgesia in ED settings and the emphasis of the Joint Commission on Accreditation of Healthcare Organizations on provision of adequate analgesia to patients in pain, they sought to determine whether appropriate analgesia was being provided to pediatric and adult ED patients with potentially painful fractures during 1997 to 2000.Pain scores were recorded in only 59% of patients overall, and in only 47% of children younger than 4 years. Even when pain scores were recorded as moderate or severe, analgesics were not routinely used. For patients with documented moderate to severe pain, 73% overall and 62% of patients younger than 4 years received any analgesia (Brown *et al.*, 2003).

A prospective, observational study of analgesic administration to trauma patients was conducted over a nine-week period following educational intervention and introduction of verbal pain scores (VPSs) at a private, 877-bed, not-for-profit teaching hospital located in western Los Angeles County. Documentation was facilitated with the introduction of a new nursing trauma flow sheet that includes a specific space for documenting pain scores adjacent to the patient's vital signs..There were 150 patients studied (183 consecutive trauma patients seen; 33 patients excluded per criteria). Pain scores were documented for 73% of the patients. Overall, 53% (95% confidence interval [CI] ¼ 45% to 61%) of the patients received analgesics in the ED. Of the patients who had pain scores documented, 60% (95% CI ¼ 51% to 69%) received analgesics, whereas 33% (95% CI ¼ 18% to 47%) of the patients without pain scores received analgesics. No patient with a VPS 4 received analgesics, whereas 72% of

patients with a VPS 4 and 82% with a VPS 7 received analgesics. Mean time to analgesic administration was 68 minutes (95% CI ¼ 49 to 87). The study conclude that, pain assessment using VPS increased the likelihood of analgesic administration to trauma patients with higher pain scores in the ED (Silka *et al.*, 2004).

Percentage of patients receiving analgesics was statistically correlated to pain severity. An urgent triage score, consumption of an analgesic at home were associated with a larger probability of receiving analgesia. Administration of medication was made most frequently for patients with abdominal, head or face pain and rarely for patients suffering in other sites. The patients with pain localized to the lower extremities and to the nose or ear were less likely to receive analgesia (Allione et al., 2011).

In 2004, Nelson and colleagues evaluated the benefits of having mandated pain scales in the ED for analgesic administration. 521encounters were reviewed prior to the implementation of the pain scale and 479 encounters were reviewed after the introduction of pain scale. The results showed that analgesic use increased from 25% to 36%, and analgesics were administered more rapidly after the pain scale was introduced: 113 minutes vs 152 minutes.(Nelson et al., 2004). Another study done in Royal Melbourne Hospital, an adult tertiary referral and major trauma center with approximately 58,000 attendances per annum and an admission rate of 40%. Results showed median time to analgesia dropped from 123 minutes at baseline to 78 minutes, 1

year after triage pain scoring become mandatory at emergency department in Australia. (Vazirani and Knott, 2012).

Results from one study demonstrate that there was a significant increase in the percentage of patients who received analgesia after the introduction of the numeric pain scale. The proportion of patients receiving analgesia even after the study intervention was low, corresponding to prior estimates that have been reported in the literature. It is possible that patients that are admitted are less likely to receive analgesia since the emergency physician feels that these medications will be prescribed by the admitting physician (Nelson *et al.*, 2004). Therefore, pain score assessment and documentation is important to assess how severe is the pain experienced by patients, so that ED personnel aware about the impact of pain on patients and deliver early appropriate analgesics to them.

Mandating the scoring of pain at triage was associated with subsequent clinically important improvements in the speed of analgesia delivery. A mandatory pain score may be the necessary flag to improve responsiveness, which at triage allows the earliest possible identification of patient distress (Vazirani and Knott, 2012).

Good assessment and documentation lead to good pain management. Good documentation should cover the initial emergency management and subsequent assessment (Liebelt E, 2000).

2.6 Factors predict pain score documentation

In article published in 2011, only 75% of elderly patients with an ED visit for a documented painful condition had documented pain scores. Gender, race, and ethnicity were not statistically significant predictors of pain score documentation. Patients in the Northeast, Midwest, and Southern United States were 1.3 times more likely to have a documented pain score compared with patients in the West (Northeast OR: 1.34; 95% CI: 1.12, 1.60). Data revealed that as patient age increases, the likelihood of having a pain score documented drops significantly. For example, patients in the age group of 65 to70 years were 1.55 times more likely to have pain documentation than older patients (OR: 1.55; 95% CI: 1.30, 1.84) (Iyer, 2011).

In another study showed, different gender will express different pain perception that may influence the assessment and documentation of pain score at triage. The differences that exist between males and females in the perception, expression, and tolerance of pain are likely influenced by a variety of social and psychological processes. Gender roles have been associated with pain response, with the masculine gender norm dictating increased tolerance of pain among males, whereas feminine gender norms accept pain as a normal part of life and are more permissive of pain expression. More limited research has addressed the contribution of gender roles to clinical pain, and the results have been mixed. For example, higher scores on 1 aspect of masculinity were associated with lower pain-related symptoms among patients with

rheumatoid arthritis. Also, higher femininity scores in college aged males predicted an increased number of pain complaints 30 years later, whereas the masculinity-femininity scale did not predict future pain complaints among females (Fillingim *et al.*, 2009).

In this study which took place at ED HUSM, other than to determine the level of adherence to pain score documentation at triage, possible factors as above also included as variables that may influence adherence to pain score documentation.

CHAPTER 3 : OBJECTIVES

In Emergency Department of Hospital Universiti Sains Malaysia (HUSM), this study was conducted to achieve the objectives as follow:

3.1 General Objectives

i. To determine adherence to pain scoring at ED HUSM triage

3.2 Specific Objectives

i. To determine the level of adherence to triage pain scoring at ED HUSM

ii. To determine associated factors that influence the adherence to pain scoring at ED HUSM triage

3.3 Research Hypothesis

i. There will be poor adherence to triage pain scoring at Emergency Department (ED) HUSM.

ii. Several factors that influence poor adherence to triage pain scoring at ED HUSM will be different pain characteristics (trauma, abdominal pain, other pain), number of patients per day, gender and position of the triage staffs.

CHAPTER 4 : METHODOLOGY

4.1 Study Design

This study was a cross sectional study of a six months period from July 2014 until December 2014.

4.2 Study Setting

This study was conducted at Emergency department triage zone , Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian, Kelantan which was a regional tertiary centre. Hospital Universiti Sains Malaysia also is a teaching institution dedicated to undergraduate and postgraduate training including Emergency Medicine.

4.3 Study populations

Referrence population:

i. All Emergency Department (ED) staff in Kelantan who work at triage; attending patients who presented with pain.

ii. All patients who presented in pain to ED.

Source population:

i. All ED HUSM staff who work at triage; attending adult patients who presented with pain.

ii. All patients who presented in pain to ED HUSM.

Sampling frame:

i. All ED HUSM staff who work at triage during research time; attending adult patients who presented with pain.

ii. All adult (>18 years old) patients who presented to ED in pain during research time.

Inclusion criteria:

i. All ED HUSM staff who work at triage during research time; attending adult patients who presented with pain. (Adult ; 18 year old and above)

Exclusion criteria:

i. All ED HUSM staff who work at triage during research time; attending patients who presented with complaint other than pain.

ii. Patients who are less than 18 years of age.

iii. All ED HUSM staff who work at other zones during research time.

4.4 Study Approval

This study was undertaken as a dissertation study for the Degree of Master of Medicine (Emergency Medicine) under the Hospital Universiti Sains Malaysia and approved by the department board review and hospital ethics committee on the 17th September 2014 (Reference; JEPeM Code: USM/ JEPeM/ 140364). (Appendix A)

4.5 Sample Size Calculation

The sample size was calculated using Power and Sample Size Calculations programme. The sample size was calculated as below using two proportion formula:

Two proportion formula :

$$n = \frac{p1\,(1-p1) + p2\,(1-p2)}{(p1-p2)^2}\,(z\alpha + z\beta)^2$$

p1: proportion from the previous study (literature review)

p2: proportion based on expert opinion.

1) Calculation I

p1: 0.4 : proportion of adherence to pain protocol in trauma pain in ED, University Hospital, Switzerland (Stephan et al., 2010).

p2: 0.6: proportion of adherence to triage pain scoring in abdominal pain in ED HUSM

n= 97 per group

97 x2 = 194

2) Calculation II

p1: 0.4 : proportion of adherence to pain protocol in trauma pain in ED, University Hospital, Switzerland (Stephan et al., 2010).

p2: 0.25 : proportion of adherence to triage pain scoring in other than trauma/abdominal pain in ED HUSM

n= 152 per group

= 152 x 2 = 304