REVIEW ARTICLE

RISK EVALUATION WITH PAIN SCORE FOR CLINICAL ASSESSMENT & MANAGEMENT OF PAIN IN EMERGENCY DEPARTMENT IN A TERTIARY CARE HOSPITAL

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ARTICLE INFO	ABSTRACT
	Introduction: Acute pain is a complex process where there is release of chemical mediators as an inflammatory response, stimulating the different nociceptors of the affected area.[1] Acute pain is a common presentation amongst patients visiting the emergency department, and its assessment and management should be a priority. Pain assessment should be done during triage and to be continued along with treatment throughout its stay in the emergency department. Management of pain improves patient's clinical outcome.[1] Pain management by medications done in the emergency department targets the pain pathway via different mechanisms, aimed at reducing or eliminating the sensation of pain.In Numeric Rating Scale, on a scale from 0 to 10 where 0 means no pain & a score of 10 denotes worst pain, the patients in ER are asked to score their pain intensity which requires some abstract thinking by the patient themselves.[3] Other prominent pain assessment methods which can be used, the Visual Analogue Scale, McGill Pain Questionnaire, Health Assessment Questionnaire, Brief Pain Inventory, and PROMIS.[4] **Aims & Objectives:** To review different methods of analgesia used, the opioid prescribing practices, evaluation of patient satisfaction and to make the necessary changes and perform the corrective actions to achieve compliance in an emergency department at a tertiary care hospital. **Methodology:** Questionnaire - based study done in the ER. **Results:** There was a significant association of Type of pain medication across the triage category. It is probable that greater proportion of analgesics have been used in the green zone of ER. The time to resolve pain followed a normal distribution, hence the One Way ANOVA has been used for the analysis. There was no significant difference in the mean-time to resolve pain across the different age groups. Also, there was no significant difference in the mean-time to resolve pain across the different type of pain. The time to resolve pain followed a normal distribution pattern. There was no significant difference in the mean type of Pain Medication across the time to resolve pain. **Conclusion:** Musculoskeletal pain was the most common type of pain amongst the patients enrolled. Patients were mostly allocated in the green zone of triage in the ER indicating the risk category. The most common age group was 30 – 50 years, The audit revealed that the most commonly prescribed medication for pain management was analgesics.

INTRODUCTION

Acute pain is a complex process where there is release of chemical mediators as an inflammatory response, stimulating the different nociceptors of the affected area.[1] Acute pain is a common presentation amongst patients visiting the emergency department, and its assessment and management should be a priority. Pain assessment should be done during triage and to be continued along with treatment throughout its stay in the emergency department. Management of pain improves patient's clinical outcome.[1] Pain management by medications done in the emergency department targets the pain pathway via different mechanisms, aimed at reducing or eliminating the sensation of pain. There are different types of pain scales which are available to assist in identifying patient's level of pain.[2] In Numeric Rating Scale, on a scale from 0 to 10 where 0 means no pain & a score of 10 denotes worst pain, the patients in ER are asked to score their pain intensity which requires some abstract thinking by the patient themselves.[3] Other prominent pain assessment methods which can be used, the Visual Analogue Scale, McGill Pain Questionnaire, Health Assessment Questionnaire, SF-36 Health Survey, Hospital Anxiety & Depression Scale, Pittsburgh Sleep Quality Index, Brief Pain Inventory, and PROMIS.[4]

Aims & Objectives

- To review different methods of analgesia used in an emergency department at a tertiary care hospital
- To review opioid prescribing practices in an emergency department at a tertiary care hospital
- To evaluate patient satisfaction in ER
- To make the necessary changes and perform the corrective actions to achieve compliance

Data of Evidence Acquisition

- Audit Lead.
- Data collection.
- Data Interpretation.
- Writing and Proofreading the Audit Report.
- Liaising with the Nursing Lead regarding educational sessions required for ER Clinical Staff.
- Liaising with the ED consultant.

Methods: Questionnaire - based study done in the ER

Questionnaire Parameters

- Age distribution
- Gender
- Risk Category of patients (Green zone, Yellow zone, Red Zone)
- Differential Diagnosis: Type of disease / pathology
- Type of Medicine used: Analgesics / Antispasmodics / Opioids
- Duration of ER stay
- Pain Score
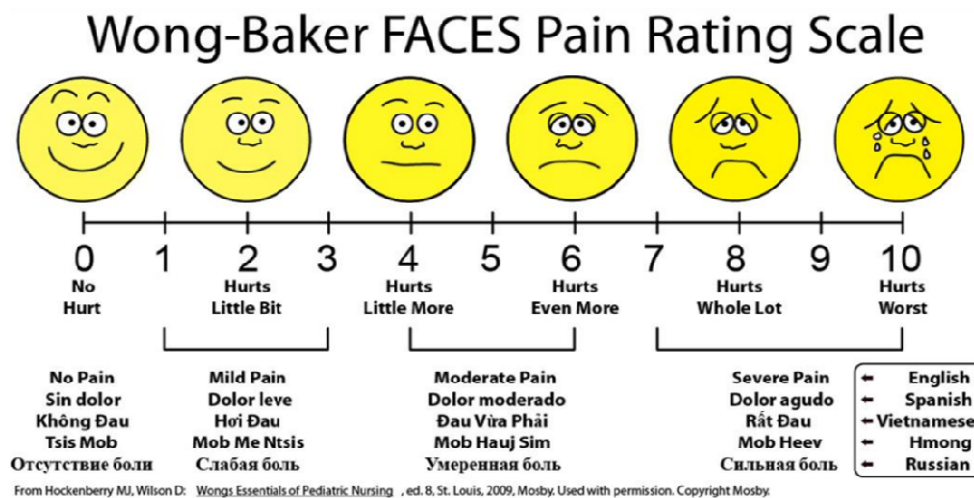- Time taken for pain relief
- Re – assessment of pain score

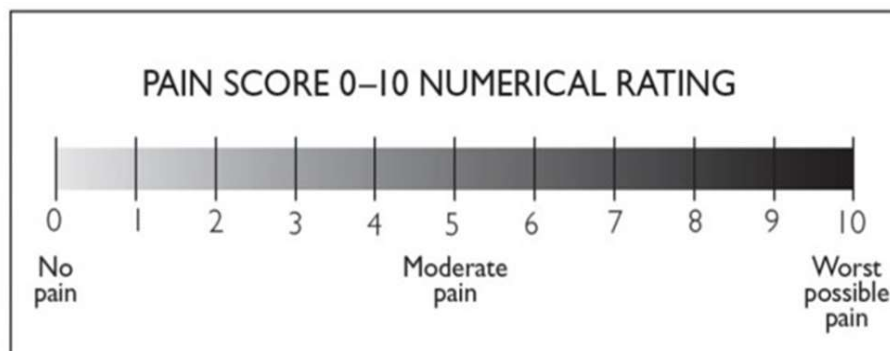
Fig 1. Wong – Baker FACES Pain Scale

Fig. 2. Numerical scale Pain

Table 1. Pain assessment (according to CEM guidelines)

Age group: (Age in years)	20 – 40 yrs	41 – 60 yrs:	60 & above:
Gender	Male	Female	
Risk Category	Green zone	Yellow zone	Red zone
Differential Diagnosis			
Pain Type	Musculoskeletal	Visceral	Functional
Medicine used	Analgesics	Antispasmodics	Opioids
Duration of ER stay	0 - 2 hrs	2 – 4 hrs	➢4 hrs
Pain score	0 – 3 _____	4 – 7 _____	8 – 10 _____
Time taken for pain relief			
Re – assessment of pain score			

RESULTS

Table 2. Risk Category: Clinical Audit Report

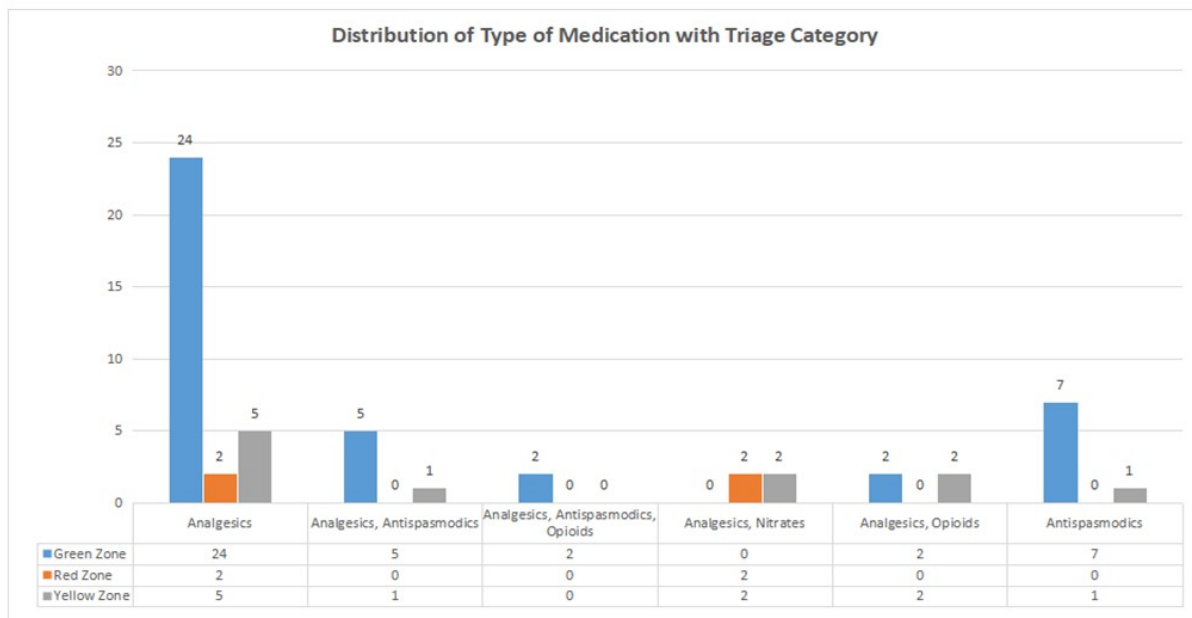| Type Of Pain Medication	Triage Category			P-Value
	Green Zone	Red Zone	Yellow Zone	
Analgesics	24	2	5	0.03
Analgesics, Antispasmodics	5	0	1	
Analgesics, Antispasmodics, Opioids	2	0	0	
Analgesics, Nitrates	0	2	2	
Analgesics, Opioids	2	0	2	
Antispasmodics	7	0	1	

Fig 3. Freeman-Halton test used for the analysis

Freeman-Halton test has been used for the analysis. The test here states: there is a significant association of Type of pain medication across the triage category. It is probable that greater proportion of analgesics have been used in the green zone of ER.

Table 3. Time distribution to resolve pain amongst various age groups

Time to Resolve Pain (in minutes)		P-Value
Age Group	Mean ± SD	
10-30yrs	135 ± 60.6	0.06
30-50yrs	81.0 ± 63.08	
>50yrs	118.3 ± 59.4	

The time to resolve pain follows a normal distribution, hence the One Way ANOVA has been used for the analysis. There is no significant difference in the mean-time to resolve pain across the different age groups.

The time to resolve pain follows a normal distribution, hence the One Way ANOVA has been used for the analysis. There is no significant difference in the mean-time to resolve pain across the different type of pain. The underlying distribution of time to resolve pain follows a normal distribution. Thus, One Way ANOVA is used for the analysis. There is no significant difference in the mean type of Pain Medication across the time to resolve pain.
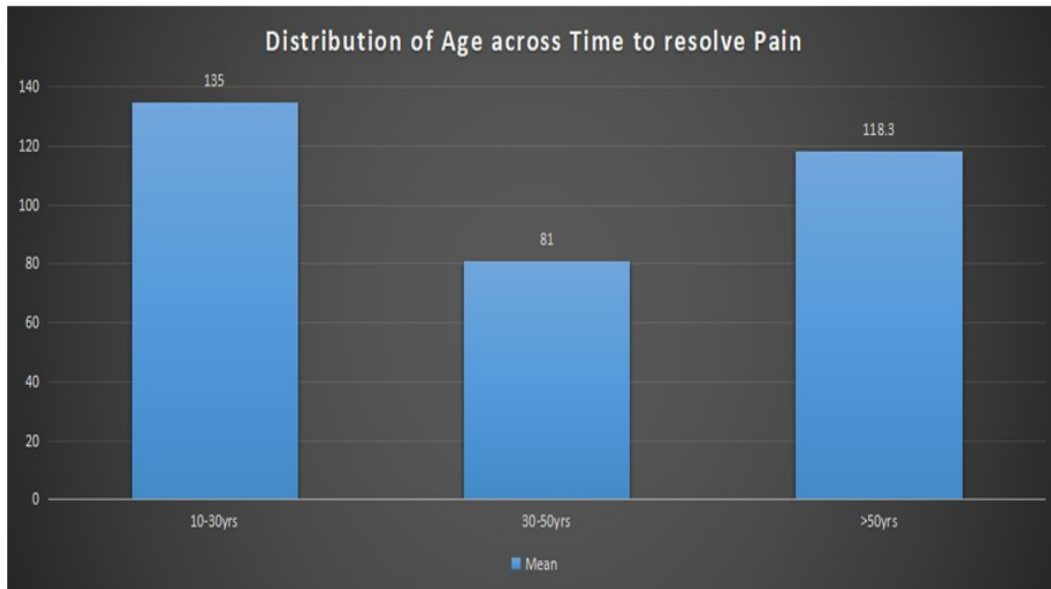
Fig. 4. Distribution of Age across Time to resolve pain

Table 4. Time distribution to resolve pain amongst pain aetiology type

Time to Resolve Pain (in minutes)		P-Value
Type Of Pain	Mean ± SD	
Cardiac	60 ± 80.3	0.24
Musculoskeletal	117.4 ± 58.1	
Musculoskeletal, Visceral	67.5 ± 74.2	
Visceral	118.5 ± 63.9	
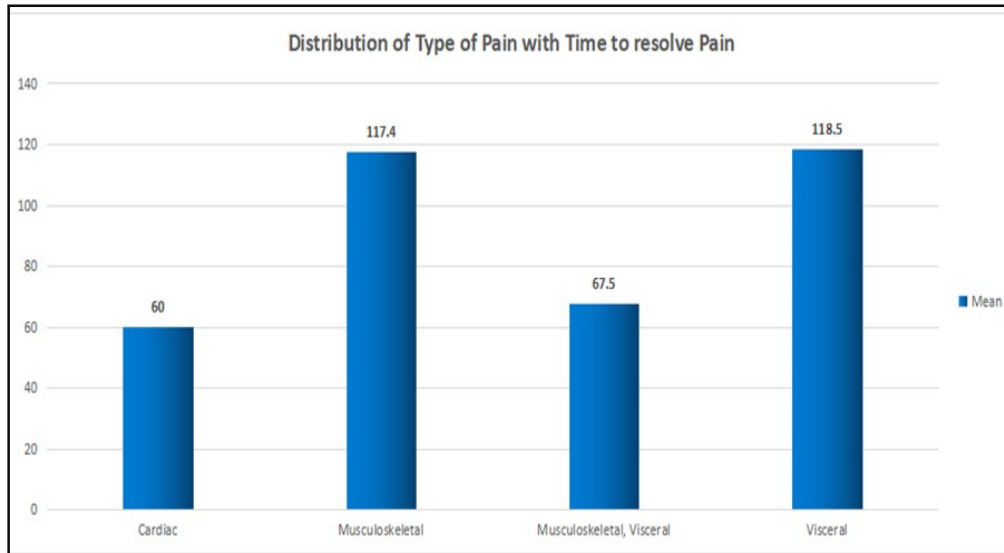
Fig 5. Distribution of type of pain with time to resolve pain

Table 4. Time distribution to resolve pain vs Type of pain medication used

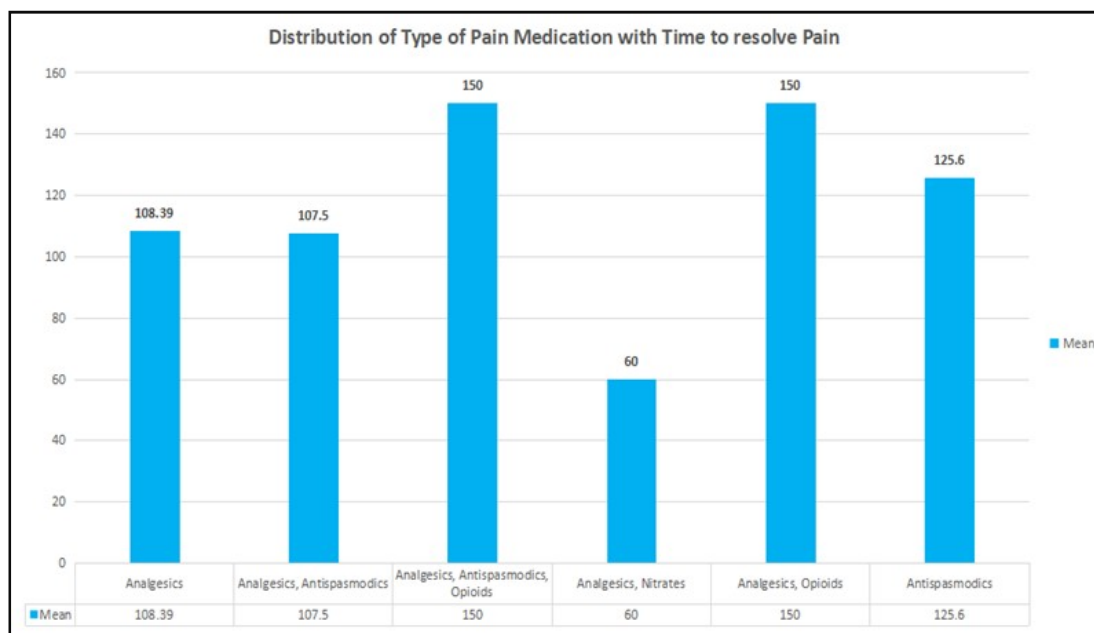| Time to Resolve Pain (in minutes)		P-Value
Type Of Pain Medication	Mean ± SD	
Analgesics	108.39 ± 59.2	0.35
Analgesics, Antispasmodics	107.5 ± 76.1	
Analgesics, Antispasmodics, Opioids	150.0 ± 0.0	
Analgesics, Nitrates	60.0 ± 80.3	
Analgesics, Opioids	150.0 ± 54.7	
Antispasmodics	125.6 ± 65.1	

Fig. 6. Distribution of type of pain medication used with time to resolve pain

DISCUSSION

A total of 55 patients were enrolled in the study, out of which 58% were male patients. Most common type of pain was musculoskeletal 56%. 72% were allocated in the green zone. The range of age were 10 - 80 years of patient recruited with mean (SD) age being 81.0 ± 63.08. The most common age group was $30 – 50$ years followed by $50 – 80$ years and above age group. Most commonly prescribed medication (80%) for pain management was analgesics in the form of Paracetamol 1gm (1.0% w/v) & Diclofenac Sodium 75mg/ml respectively. The medications were reviewed as per standard treatment guidelines. Time to resolve musculoskeletal pain (Mean $\pm$ SD 117.4 ± 58.1)followed a normal distribution & the One Way ANOVA was used for the analysis. Time to Resolve Pain (in minutes) in analgesic medications Mean $\pm$ SD108.39 ± 59.2. In all other medications, there was no significant difference in the mean type of Pain Medication across the time to resolve pain.

Limitations of study

- Sample size was kept small in the stipulated time-frame
- Single hospital could not represent the larger demography and population.
- The analysis may not have been generalized, because of single hospital & small audit.

CONCLUSION

In the clinical audit, musculoskeletal pain was the most common type of pain amongst the patients enrolled. Patients were mostly allocated in the green zone of triage in the ER indicating the risk category. The most common age group was $30 – 50$ years followed by $50 – 80$ years and above age group. The audit revealed that the most commonly prescribed medication for pain management was analgesics in the form of Paracetamol 1gm (1.0% w/v) & Diclofenac Sodium 75mg/ml respectively. Even though the ER physicians have adhered to the standard treatment guidelines, individualised treatment should be taken into consideration with respect to the subjective nature of pain & nociception along with the clinical outcome, development of any adverse drug or hypersensitivity reaction and patient compliance.

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