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RESEARCH ARTICLE

EMERGENCY DEPARTMENT PAIN MANAGEMENT PRACTICES AND PATIENT SATISFACTION IN A TERTIARY CARE HOSPITAL IN KOLKATA, INDIA.

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Abstract

Introduction: Pain is one of the most common complaints for which people come to the Emergency Department (ED). To achieve satisfactory treatment of pain, the clinician must first recognize and assess the pain.

Methods: We conducted a prospective single centre study on 325 patients, who presented during the study period with acute painful conditions. We assessed pain aetiologies, patient pain experiences, pain management practices, and patient satisfaction with pain management.

Results: Out of the 325 study subjects 49.2% reported high pain intensity levels on presentation, with a mean rating of 7.24 on a 10-point numerical rating scale (NRS). The initial pain score recorded by the patient was a significantly higher compared to the nurses and Emergency Physicians pain judgement ($p < 0.001$). After receiving analgesia, pain severity had decreased to a mean rating of 3.24 but was again significantly higher by the patient than the mean score of health care personnel ($p < 0.001$). Most of the patients $n = 197$ (60.6%) were satisfied with the pain management in the ED. 20.9% of the patients remained neutral with their comments, whereas 18.5% were dissatisfied. In 93.8% of the dissatisfied patients, the reason was inadequate pain relief. Only 3.1% were dissatisfied due to side-effects of the medications.

Conclusion: In our study we found that the initial pain score recorded by the patients were significantly higher than the nurses and physicians. However, most of the patients were satisfied with the pain management in the ED. Our study demonstrates the importance of adequate pain management in ED.

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Introduction:-

Pain is the most common reason for people to seek treatment at the Emergency Department (ED). While the underlying pathology causing the pain may be diverse, the principle of management remains largely similar. It is possible that evaluating the presence of pain and patients' satisfaction with pain management should be an area of focus more important than attempting to measure pain management through standardized numeric scales [1,2]. In the western world, surveys of patients' satisfaction with the care they've received have become a benchmark by which hospitals measure and market their services.

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However, the problem of inadequate pain treatment is prevalent among many EDs. A recent review revealed that 50% of these patients got inadequate pain management while in ED. The reasons for 'oligo-analgesia' by ED doctors and nurses include inadequate assessment of pain, inadequate knowledge of analgesic pharmacology, the use of inadequate doses of analgesics, fear of the 'masking' of symptoms, poor ED processes for the provision of analgesia as well as failure to recognize pain relief as a key component of ED management. To make things better health care providers should first recognize the degree of pain among the patients. So near accurate assessment of patients' pain is needed for proper management of the pain.

Previous studies, done in the west, suggest that there is a lack of adequate pain treatment and "oligoanalgesia" is very common amongst Emergency Physicians [3 -7] in general, but none have been done in Indian setting. The aim of the present study was to understand whether the patient's pain perception matched with the doctor's and nurses' perceptions and to assess the level of patients' overall satisfaction with the current pain management practices in the ED from triage to discharge. The study aims to improve the quality of healthcare in the Indian setting and will benefit the patients seeking pain management at large. This study also aimed to determine the value of a simple survey tool in measuring patient satisfaction.

Materials and methods:-

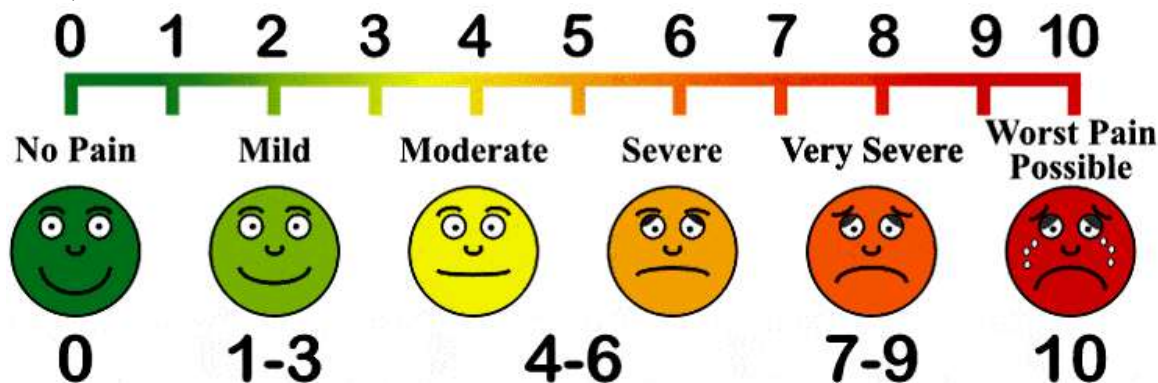
Recruitment of study participants: This was a single center prospective observational clinical study conducted between January 2014 to January 2015 in the Emergency Department of Peerless Hospital and B.K. Roy Research Centre, Kolkata which is a teaching hospital. All patients, who presented to the Emergency Department during the study period with chief complaints of pain, were prospectively recruited into the study after they had consented. 325 patients were enrolled. The study protocol was approved by the Scientific Research Ethics Committee of the participating hospital. Written informed consent was obtained from each patient prior to enrolment.

Inclusion criteria: We enrolled all adult patients above 18 years of age patients who arrived in the ED complaining of pain. Only hemodynamically stable who were able to understand and converse i.e. fully conscious were included in our study.

Exclusion criteria: age less than 18 years, Glasgow Coma Scale score less than 15/15, hemodynamically unstable requiring immediate care, intoxicated, patients suffering from pain of more than 72 hours, patients who has taken any type of analgesia within the preceding 4 hours prior to their arrival at the ED and patients unable to fill the informed consent.

Study design:

Patients were given a two part questionnaire and asked to fill up the part I after triage and prior to any treatment. The second part of the forms was filled up by the patients at the time of discharge or transfer to appropriate ward /intensive care unit. We assessed the pain score and their level of satisfaction before transfer/ discharge from the Emergency Department. A horizontal 0 to 10 Numeric rating pain scale was used to measure the pain score on both the occasions along with face score. Pain severity was defined in the following manner: mild, 1–3; moderate, 4 – 6; and severe, 7 – 10.



The Emergency Department attending doctors and the nurses, who were looking after the patients, also rated the patients' pain scores simultaneously. Pain scores of the patients, doctors and nurses were thus obtained

independently and blindly from the records in the case sheets. The researcher was not allowed to intervene in the patients' management at any point. We recorded the anamnestic data and demographic information for each patient enrolled in the study. Information about pain: onset, duration, how the triage nurse judged it (as per the criteria described above), and treatment given were recorded from the in a case sheets. Data regarding the chief complaints or the diagnoses of the patients (soft tissue injury / infections (STI), musculoskeletal pain, headaches, abdominal pains, chest pains, fractures and foreign bodies) were divided into seven categories and also recorded. As there were no proper guidelines for acute pain management in the ED, pain management depended on doctors' professional experiences. Most of them followed the WHO pain ladder while giving treatment.

Table I:- Demographic information

Age distribution of the patients		
Age group	Frequency	Percentage
18-30 yrs.	100	30.8
31-40 yrs.	44	13.5
41-50 yrs.	71	21.8
51-60 yrs.	64	19.7
61-80 yrs.	42	12.9
> 80 yrs.	4	1.2
Gender distribution		
Gender	Frequency	Percentage
Male	147	45.2
Female	178	54.8
Religion		
Religion	Frequency	Percentage
Hindu	297	91.4
Muslim	18	5.5
Christian	10	3.1
Level of Educational		
Education	Frequency	Percentage
Illiterate	6	1.8
Primary school	10	3.1
Middle school	40	12.3
High school	46	14.2
Intermediate	16	4.9
Graduate	127	39.1
Post-graduate	76	23.4
Doctorate	4	1.2
Level of pain on arrival		
Pain score	Frequency	Percentage
1-4	51	15.7
5-7	114	35.1
8-10	160	49.2
Causes of pain		
Pain by areas	Frequency	Percentage
Extremities	105	32.6
Abdominal pain	175	53.8
Chest pain	15	4.6
Headache	25	7.7

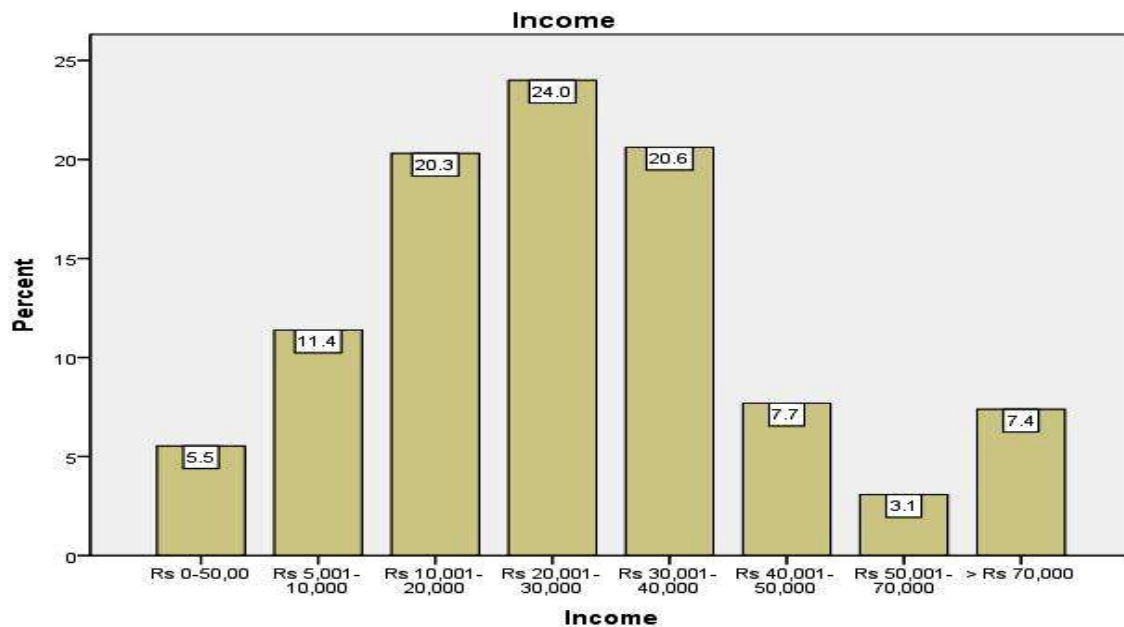
Statistical Analysis: Upon completion of data collection, data were coded, captured on Excel and then the statistical analysis were done. Discrete variables were expressed in percentage; for normally distributed data, continuous variables were presented as mean \pm standard deviation (SD) and statistical significance was assessed by paired T test and Wilcoxon Signed-Rank Test was employed where appropriate.

Results:-

A total of 325 patients were enrolled in this study of which 54.8% were females and rest 45.2% were male patients. Among them, 30.8% were in 18-30 years age group, 21.8% were in 41-50 years age group which makes approximately 50 % of the patients within 40 years (Table I).

Among enrolled patients, majority (63.7%) had graduation level of education or higher and 91.4 % were Hindu by religion. 64.9% of the patients had monthly income in between Rs.10,000 and 40,000 but 20% patients had more than Rs.40,000 monthly income (Diagram I).

Diagram I:- Income level of the patients



Among enrolled patients, 44.6% were admitted in the wards whereas only 4.3% were placed in ITU/ITC based on their condition.

Patient's pain was assessed by using Numeric Rating Scale (NRS) by patient on arrival and categorized numerically as per VAS score 1-4 as mild, score 5 to 7 as moderate and score 8 to 10 as severe. It was observed that about 50 % of the patients had severe (score 8 to 10) pain on arrival. The pain score were also recorded by the treating doctor and nurse in separate sheets. The patient's average pain score was recorded to be 7.24 ± 2.2 compared to nurse's assessment score of 5.7 ± 2.4 and the doctor's average score of 5.7 ± 2.2 . When compared the three sets using paired t-test, the patient's pain score was found to be significantly higher ($p < 0.001$).

Table II:- comparison of pain scores on arrival (Patients', doctors' and nurses')

	N	Minimum	Maximum	Mean	Std. Deviation
Patient pain score	325	2	10	7.24	2.160
Doctors pain score	325	0	10	5.72	2.410
Nurses pain score	325	1	10	5.70	2.263

Table III:- Paired t-tests between patients' vs. doctors' & nurses' pain score on arrival

Pain score	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			

patients' vs. doctors' pain score	1.52	2.37	0.13	1.26	1.78	11.57	324	<0.001
patients' vs. nurses' pain score	1.55	1.91	0.116	1.34	1.76	14.61	324	<0.001

Table IV:- comparison of pain scores after treatment (Patients', doctors' and nurses')

	N	Minimum	Maximum	Mean	Std. Deviation
Patient pain score	325	0	9	3.24	2.470
Doctors pain score	325	0	8	2.12	2.086
Nurses pain score	325	0	8	2.30	1.975

Table V:- Paired t-tests between patients' vs. doctors' & nurses' pain score after treatment

Pain score	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
patients' vs. doctors' pain score	1.123	1.973	0.109	0.908	1.338	10.26	324	<0.001
patients' vs. nurses' pain score	0.942	1.918	0.106	0.732	1.151	8.850	324	<0.001

Table VI:- Patients' level of satisfaction after receiving treatment

Patients' level of satisfaction		
Satisfaction level	Frequency	Percent
Very di-satisfied	37	11.4
Dis-satisfied	23	7.1
Neutral	68	20.9
Satisfied	115	35.4
Very satisfied	82	25.2
Reason for dissatisfaction of the patients		
Inadequate pain relief	120	93.8
Wait time too long	12	9.4
Excess side effect	10	7.8

Table VII:- Wilcoxon Signed-Rank Test comparing the difference between patients' and doctors' and nurses pain scores based on diagnosis

Diagnosis	n (%)	Doctors		Nurses	
		Z-value	P-value	Z-value	P-value
Soft tissue injury	9 (2.8)	-2.12	0.034	-0.91	0.36
Musculoskeletal pain	17 (5.2)	-3.24	0.001	-3.32	0.001
Headache	25 (7.7)	-3.56	0.72	-3.85	0.0001
abdominal pain	175 (53.8)	-8.64	0.0001	-8.41	0.0001
chest pain	15 (4.6)	-3.21	0.001	-3.05	0.002
Fracture	80 (24.6)	-2.98	0.003	-5.5	0.0001

We found that there was significant pain relief amongst the patients after they received treatment for pain. After receiving treatment, the patient's average pain score was 3.2 ± 2.5 compared to nurse's score of 2.3 ± 2.0 and the doctor's score of 2.1 ± 2.1 .

Though the patient's post treatment pain score was significantly higher ($p < 0.001$) in comparison to the doctors and nurses as measured by paired t-test, only 18% of the patients were not satisfied and 21% had no comments about satisfaction level after receiving the treatment. The main reason for dissatisfaction was inadequate pain relief (93.8%). Side effects of nausea to therapy were reported by 10 patients only as reason of their dissatisfaction. We also compared the difference between patients' and doctors' and nurse's pain scores based on diagnosis using the Wilcoxon Signed-Rank Test both before and after the patient received treatment. Patient's pain score was significantly higher ($p < 0.001$) in all category of diagnosis except headache (Table: VII)

Discussion:-

Though improving the management of acute pain is a priority for ED, all previous studies have documented a high prevalence of oligoanalgesia by Emergency Physicians [3 -7]. Most of these studies found the cause of this oligoanalgesia as recording of lesser levels of pain intensity by nurses and doctors, compared to the patients at arrival to Emergency department. The results of our study are consistent with these previous studies in respect to the levels of pain score on arrival. The patient's average pain score was higher (3.2 ± 2.5) compared to nurse's assessment (2.3 ± 2.0) and even by the doctors (2.1 ± 2.1). Patient's pain score was significantly higher ($p < 0.001$) in all category of diagnosis except soft tissue injury.

Thus, methods relying on the physician's or nurses' assessment of pain are inadequate because patients are ultimately the only true experts in evaluating the intensity of their own pain. However, a significant number (61%) of the patients in our study were satisfied with the pain management received in Emergency Department ; 21 % had no comments about satisfaction level after receiving the treatment and 18 % of the patient said that were not satisfied. In our study, we recorded mean pain intensity levels of 7.24 on ED arrival and 3.24 at the time of discharge (on a 10-point numerical scale). The findings of our study is supported by another previous study done in USA by Stahmer and colleagues [8] who reported mean pain intensity levels of 7.0 on ED arrival and 4.5 at the time of discharge (on an 11-point numerical scale). In that study, pain relief was a significant predictor of patient satisfaction with pain management and our study has the same inference in this regard.

Most of our patients ($n = 160$ or 49. 2%) reported high levels of pain intensity at arrival but significant reduction in pain during discharge or transfer from the Emergency Department. In this respect, our findings are not consistent with previous two Canadian studies who have reported pain intensity on Emergency Department arrival and discharge. Ducharme and Barber [7] reported moderate to severe pain in 69% of patients at ED presentation vs. 58% at discharge using similar pain intensity categorization to our study. Guru and Dubinsky [9] also reported that out of 75% of patients who arrived to Emergency Department in moderate to severe pain, 61% of those were discharged with pain of this intensity. The difference in the satisfaction levels of the previous studies could be the fact that only half of the patients in pain received any analgesic, and that these were administered 2 hours after ED presentation, whereas, in our study, all the patients received analgesics very early administration after ED presentation. Another significant finding of our study was 93.8% of the total dissatisfied group (18%) because of inadequate pain relief after receiving treatment.

So we conclude that offering adequate analgesia promptly to patients is a very important predictor of patient satisfaction when pain management is given and any delay should be avoided.

However, it is also interesting also to note that, although many of our patients experienced high levels of pain, most of them did not request analgesics. Development of patient education might increase the proportion of patients who ask for analgesics, though our data suggest that many patients do not expect pain control.

Conclusion:-

Our study found that patients reported relatively high levels of satisfaction with pain management. Although this finding is somewhat reassuring, it may reflect the insensitivity of our assessment instruments or the social desirability bias inherent in this tool. In summary, there is still a need for improving assessment on pain management in ED.

Based on previous studies as well as our findings, it seems prudent to recommend that pain intensity be assessed routinely both at arrival, at regular intervals during their ED stay and at the time of ED discharge and the better monitoring tool is the patient-focused outcome. Posting signs that highlight the commitment of ED staff to address

patients' pain might increase the proportion of satisfied patients. Protocols that offer analgesics at triage should be implemented and patients should be offered early pain relief. Such protocols and their utilization may be evaluated in future larger multicentre studies.

Limitations:-

This study was unable to clearly perform subset analysis due to low numbers in some categories such as the difference between patients with low and high levels of pain, diversity in treatment and cause of pain. It was also skewed toward patients with severe pain since the majority of patients presented with pain scale rating of 7 or above.

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