

Evaluation of the Management of Cases with Pain Complaint and Practices in Emergency Departments

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ABSTRACT:

Background: Pain is one of the most common reasons for presentation to emergency departments (EDs) and is present in 80% of patients. In our country, no standardized procedure has yet been developed for the management of patients with pain complaints. We conducted a study to retrospectively examine the pain control approach and management practices of physicians of different seniority to patients with pain complaints in EDs and to establish a certain standard by determining the differences between pain treatment, drugs used, and users.

Materials and Methods: This study was carried out prospectively with a questionnaire administered to physicians working in hospitals in Hatay province and Emergency Medicine clinics in six major cities after permission from the Hatay Mustafa Kemal University Non-Interventional Research Ethics Committee. In the questionnaire, 32 questions were asked about the physicians' professional status, demographic data, approach, and management of patients with pain complaints, and the data were processed and evaluated using SPSS 22.

Results: A total of 273 Emergency Medicine Specialists (EMSs), Emergency Medicine Assistants (EMAs), and General Practitioners (GPs) participated in the study. Among the study participants, 37.4% (n=102) used pain scales, while 42.5% (n=116) routinely used pain scales at discharge. In the study, non-steroidal anti-inflammatory drugs were the first preferred analgesic agent for headache, low back pain, extremity pain, and dysmenorrhea. In burn patients, acetaminophen (n=122) and fentanyl (n=52) were the preferred drugs. EMS and EMA preferred fentanyl more frequently in abdominal pain and burn patients than the GP group (p=0.001). In patients with chest pain, morphine use by EMS and EMA was significantly higher than in the GP group (p<0.001).

Conclusion: It was observed that there was no standardized approach in the management of patients with pain complaints in ED and the use of pain scales was low. It was concluded that the level of education and experience of physicians are important in the choice of analgesia.

KEYWORDS:

Emergency department, Pain complaint, Case management, Analgesics.

1. Introduction

Pain is the most common symptom in patients presenting to the EDs and is the first complaint in approximately 80% of patients. EDs serve as units where acute conditions are taken under control for patients and in this process, the cause of the patient's pain is determined, as well as supportive treatment for their symptoms. Pain is a condition that is seen as a bad experience for patients presenting to the ED and has physiologic consequences. Inadequate treatment of pain remains an important problem in pain management. ⁽¹⁾ The degree of pain of the patient should play a role in deciding the urgency and treatment of the patient. Therefore, pain scoring should be used both to measure the degree of pain and to determine the response to treatment. ⁽²⁾

Although it is known that there are no standardized approaches to pain management in the EDs of our country, there are inadequacies in the determination studies regarding the current situation when internationally accepted standards are taken into consideration. Moreover, it is observed that there are significant

clinical practice differences in the EDs of our country, such as the use of pain scales is not very common, opioid use is low, and the intramuscular route is more commonly used. ⁽³⁻⁵⁾

After pain is perceived by nociception in humans, it is transmitted to the central nervous system (CNS) via the sensory nervous system, and the pain sensation evaluated here is characterized as a bad experience for humans, and the body develops a response against the mechanism that causes pain. ⁽⁶⁾

The impact of pain management practices in EDs is unknown. To improve pain management in EDs, it is important to understand the current state of clinicians' analgesic practice as well as patients' pain experiences. These issues have not been investigated with sufficient studies. The scientific aim of this study is to contribute to the literature by evaluating the pain control approach and management practices of physicians of different seniority to patients with pain complaints in emergency departments and to establish a certain standard by determining the differences in pain treatment, drugs used, and users.

2. MATERIALS AND METHODS

This study was conducted at Hatay Mustafa Kemal University Faculty of Medicine, Department of Emergency Medicine, with the ethics committee permission obtained from Hatay Mustafa Kemal University Non-Interventional Clinical Studies Ethics Committee, with the date and number 17.02.2022/14. Physicians working in emergency medicine clinics in six major cities of Turkey (Istanbul, Ankara, Izmir, Antalya, Adana, Gaziantep), emergency physicians working in EDs of state hospitals in Hatay province, and emergency medicine assistants (EMAs), emergency medicine specialists (EMSs) and general practitioners (GPs) working in the ED of Hatay Mustafa Kemal University were included in the study. The study included 273 doctors working in these hospitals in March and April 2023, the dates of the study.

In this prospectively planned study, the participants working in the included regions were administered the 'Approach to Pain and Pain Management Practices in Emergency Departments' questionnaire consisting of 32 questions describing demographic data, educational status, and approach and

management of pain.

During the evaluation, a 5-point Likert scale was used in the questionnaire, and the answers given in this scale were evaluated by giving 0 points for "never", 1 point for "rarely", 2 points for "undecided", 3 points for "mostly" and 4 points for "always".

While evaluating the findings obtained in the study, SPSS (Statistical Package for Social Sciences) for Windows 22.0 program was used for statistical analysis. Descriptive findings are given as numbers and percentages, mean and standard error. Comparisons between groups were analyzed by chi-square test and significance test of the difference between two means (t-test and ANOVA). For the chi-square test and the significance test of the difference between two means, a p value less than 0.05 was considered significant.

3. RESULTS

A total of 273 participants, 110 (40.3%) female and 163 (59.7%) male, were included in our study. Of these participants, 90 (33%) were EMAs, 85 (31.1%) were EMSs, and 98 (35.9%) were GPs. The majority of participants 94 (34.4%) had 1-5 years of experience. Demographic data of the participants are presented in Table 1.

Table 1: Combined demographic data of participants

Demographic Data	N	%
Title		
- EMAs	90	33.0
- EMSs	85	31.1
- GPs	98	35.9
Gender		
- Female	110	40.3
- Male	163	59.7
ED Work Experience		
- < 1 year	71	26.0
- 1-5 years	94	34.4
- 5-10 years	55	20.1
- 10-15 years	31	11.4
- > 15 years	22	8.1

EMAs: Emergency Medicine Assistants, EMSs: Emergency Medicine Specialists, GP: General Practitioners

While 20 (7.3%) of the participants had less than 1,000 monthly visits to the ED where they worked, 122 (44.7%) of the participants had more than 20,000 monthly visits to the ED where they worked. The most common answer given by the participants on the rate of pain complaints was between 50–74% with 134 (49.1%) participants.

While 133 (49.7%) of the participants stated that the triage officer did not use any pain scale in the ED, 17 (9.9%) participants stated that they did not use a pain scale during the working period. 28 (10.3%) of the participants said that they did not use a routine pain scale at the patient's discharge from the ED. Table 2 shows the participants' information on pain scale use in the ED.

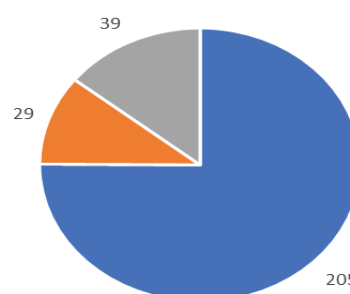
Table 2: Participants' use of the pain scale in the ED

Pain Scale Usage	N	%
Triage Nurse's Frequency of Using Pain Scale		
- Never	133	49.7
- Rarely	76	27.8
- Unsure	41	15.0
- Mostly	15	5.5
- Always	8	2.9
Frequency of Using Pain Scale While Working in the ED		
- Never	17	9.9
- Rarely	91	33.3
- Unsure	40	14.7
- Mostly	102	37.4
- Always	13	4.8
Routine Use of Pain Scale Before Discharge in the ED		

Pain Scale Usage	N	%
- Never	28	10.3
- Rarely	76	27.8
- Unsure	22	8.1
- Mostly	116	42.5
- Always	31	11.4

Among the participants, 205 (75.1%) used numeric pain scales, 29 (10.6%) used Visual Analog Scale (VAS), and 39 (39%) used other pain scale methods (Figure 1).

The pain assessment scale used



Numeric pain scale: 205 Visual Analog Scale: 29 Other: 39
Figure 1: Types of pain scales

It was observed that 24 (8.8%) of the participants had a common pain management view in their organization. Among the participants who answered the questions in the study, 8 (29%) stated that they always follow the door-painkiller time tracking, 121 (44.3%) participants stated that they always question the history of analgesia in patients with pain complaints, 21 (7.7%) participants stated that they always delay analgesia due to the possibility of delayed diagnosis or cover-up of the clinical condition. Analgesia history and use behavior are presented in Table 3.

Table 3: Analgesia history and usage behavior (with time expressions)

Question	Never (N, %)	Rarely (N, %)	Unsure (N, %)	Mostly (N, %)	Always (N, %)
In your ED, how frequently do you track door-to-analgesic time?	59 (21.6%)	65 (23.8%)	61 (22.3%)	80 (29.3%)	8 (2.9%)
How frequently do you inquire about the analgesic usage history prior to admission for patients presenting with pain?	2 (0.7%)	12 (4.4%)	12 (4.4%)	126 (46.2%)	121 (44.3%)
In patients presenting with pain to your ED, how frequently do you delay administering analgesics due to concerns of diagnostic delay or obscuring the clinical condition?	21 (7.7%)	83 (30.4%)	52 (19.0%)	96 (35.2%)	21 (7.7%)

1 (0.4%) of the participants stated that they always administered oral analgesia. 34 (12.5%) participants said they repeated the pain scale after analgesia. 2 (0.7%) participants said they always preferred opioid analgesics, and 1 (0.4%) participant said they always had complications related to opioid use. 39 (14.3%) of the participants said they always looked at patients' old prescriptions, while 11 (4%) participants said they always saw a chronic patient presenting in the ED. While 80 (29.3%) of the participants thought that there was a weakness in outpatient care for those with chronic pain, 167 (61.2%) participants said that they always asked about the pain status of patients after analgesia.

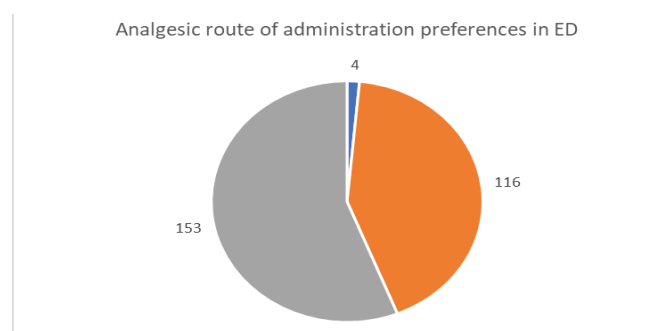
Participants' reservations after opioid analgesic use were evaluated. 213 (78%) participants expressed concern about the risk of respiratory depression.

While 3 (1.1%) of the study participants thought that they might become addicted with a single dose, 103 (37.7%) participants stated that they had never used opioid antagonists. While 215 (78.8%) of the participants stated that they never prescribed opioids, 5 participants (1.8%)

stated that they always encountered someone addicted to opioids in the ED.

The most common reason for avoiding opioid prescription at discharge from ED was the risk of addiction, stated by 241 (88.3%) participants.

When the preference for the route of administration of analgesia in ED was analyzed, 116 (42.5%) participants preferred intramuscular, 153 (56%) participants preferred intravenous, and 4 (1.5%) participants preferred oral administration (Figure 2).



oral: 4 intravenous:153: intramuskuler:116
Figure 2: Distribution of preferences for analgesic route of administration in the emergency department

Table 4 shows the participants' order of preference for analgesics for various pains and age groups when using them in the ED or prescribing them at discharge.

Table 4: Participants' preferred analgesic choices by scenarios

Scenario	Paracetamol	NSAIDs	Tramadol	Fentanyl	Morphine	Other	Meperidine
In ED Clinical Scenarios							
- Headache	87	182	0	1	0	1	2
- Back Pain	15	248	7	3	0	0	0
- Abdominal Pain	68	61	39	72	3	28	2
- Renal Colic	21	164	33	45	2	6	2
- Extremity Pain	28	221	10	12	1	1	0
- Burn	68	122	19	52	8	3	1
- Dysmenorrhea	38	225	2	3	0	5	0
- Chest Pain	98	39	3	23	85	24	1
- Elderly Patient	225	30	8	7	0	2	1
- Pregnant Patient	270	0	0	1	0	0	0
- Pediatric Patient	85	187	0	1	0	0	0

Scenario	Paracetamol	NSAIDs	Tramadol	Fentanyl	Morphine	Other	Meperidine
At Discharge Prescription Preferences							
- Headache	85	187	0	1	0	0	0
- Back Pain	26	244	0	1	0	2	0
- Abdominal Pain	97	100	0	2	0	73	1
- Renal Colic	26	231	0	5	0	11	0
- Extremity Pain	30	242	0	1	0	0	0
- Burn	68	196	2	2	0	5	0
- Dysmenorrhea	42	226	0	0	0	5	0
- Chest Pain	132	79	2	2	4	51	3
- Elderly Patient	236	31	1	0	1	1	0
- Pregnant Patient	269	3	0	1	0	0	0
- Pediatric Patient	264	8	0	1	0	0	0

After the participants were grouped according to their years of practice, their responses to the painful patient scenarios were evaluated. For the scenario of “a patient with chronic kidney disease presenting with abdominal pain who has not yet undergone dialysis”, the rate of waiting for analgesia administration was found to be significantly higher in physicians with more than 15 years of practice ($p=0.002$). For patients who were followed up with the scenario of “48-year-old male patient presenting with typical chest pain, normal physical examination, and no Electrocardiogram findings”, the rate of physicians who worked between 1-5 years was significantly higher than the other periods ($p=0.004$). In the case of “patient presenting with headache, Glasgow Coma Scale (GCS) <15 and lateralizing findings on physical examination”, it was observed that physicians who had been working for less than 1 year or had experience between 1-5 years would administer analgesia more frequently than the other groups ($p=0.01$). In the scenario of “patient presenting with unilateral flank pain and deficiency on physical examination”, 73.2% of physicians with less than 1 year of experience stated that they would not delay the administration of analgesia, which was significantly higher than the other groups ($p<0.001$). In the “78-year-old patient presenting with back pain” scenario, 59.2% of physicians with less than 1 year of experience stated that they would not delay the administration of analgesia, which was significantly higher than the other groups ($p=0.033$).

A comparison was made between the painkiller preferences of the participants who participated in the study and were grouped as EMS, EMA, and GP working in Emergency Medicine, according to the type of pain by using the chi-square test, and significant results were found in abdominal pain, chest pain, burns, and elderly patients. Fentanyl preference of EMS and EMA in patients with abdominal pain was significantly higher than that of the GP group ($p<0.001$).

Participants in the GP group preferred NSAIDs more frequently than the other groups in burn patients ($p=0.001$).

In the grouping according to occupation, participants in the GP group frequently preferred NSAIDs and paracetamol for chest pain, while the preference for morphine was significantly higher in the EMA and EMS groups ($p<0.001$).

Although acetaminophen was found to be the most preferred drug group in elderly patients, NSAID use was significantly higher in the GP group ($p=0.008$).

Table 5 shows the comparison of analgesics prescribed at discharge according to occupations and pain types. In the comparison between occupational groups for patients presenting with abdominal pain, it was observed that the preference for NSAIDs was significantly higher in the GP group participants compared to the other groups ($p<0.001$).

Table 5: Discharge analgesic prescription preferences by professional groups

Scenario	Chi-square	p-Value	Relationship Ratio
Headache	5.889	0.208	6.175
Back Pain	9.58	0.143	10.69
Abdominal Pain	39.48	<0.001	41.279
Renal Colic	9.6	0.143	9.76
Extremity Pain	5.137	0.274	5.75
Burn	5.05	0.751	6.26
Dysmenorrhea	6.122	0.19	5.81
Chest Pain	19.5	0.077	22.35
Elderly Patient	10.14	0.255	10.26
Pregnant Patient	3.55	0.469	4.59
Pediatric Patient	3.44	0.486	3.87

No significant difference was found in the frequency of pain scale use by occupational groups while working in the ED ($p=0.842$). There was no significant difference in the frequency of routine pain scale application during discharge according to occupational groups ($p=0.777$).

According to occupational groups, a comparison was made between the waiting situations and patient scenarios. In the scenario "Hypotensive patient with back pain and nausea in the epigastric region", the frequency of analgesia administration was significantly higher in the GP group compared to the other groups ($p=0.001$). In the scenario of "Patient presenting with headache, GCS<15 and lateralizing findings on physical examination", the GP group participants administered analgesia significantly earlier than the other groups ($p=0.005$). In the scenario of "patient presenting with unilateral side pain and deficiency on physical examination", the frequency of administering analgesia without waiting was significantly higher in the GP group participants compared to the other groups ($p<0.001$). In the scenario of "78-year-old patient presenting with back pain", the frequency of EMS group participants to keep the patient waiting for analgesia was significantly higher than the other groups ($p=0.001$).

Concerns about the use of opioid analgesia were compared according to occupational groups. The EMS group was significantly less concerned about the risk of respiratory depression than the other groups ($p<0.001$). The change in the level of consciousness in the direction of

deterioration of control was found to be a more frequent concern for participants in the GP group ($p<0.001$). Participants in the EMS group had fewer reservations about side effects compared to the other groups ($p<0.001$). Participants in the GP group had significantly more reservations about the difficulty in accessing the antidote than the other groups ($p<0.001$).

4. DISCUSSION

This study represents a broad-based, multicentre investigation of ED patients' experience of pain. Consistent with previous emergency medicine research involving predominantly single-centre studies, our results suggest that pain continues to be undertreated in the ED. Pain was the main complaint during patient visits. This high prevalence of pain has important implications for the allocation of resources in emergency medical care and for education and research efforts.^(7,8)

The type of pain and the analgesic agent used in the management of patients with pain complaints in EDs may vary according to the experience and training of the physicians using the analgesic agent.

In a study conducted in Turkey, pain management was evaluated on EMSs and EMAs throughout Turkey. In this study, a total of 386 participants were reached, and 63.3% of these participants were men.⁽⁹⁾

When the demographic distribution of the participants was examined, it was found that the gender distribution across the country, the study sample in the literature, and the gender distribution in our study were similar.

EDs are acute treatment units for patients. In a study examining the quality standards, the number of ED admissions for the United States, which had a population of 316,497,500 in 2013, was found to be 130,035,300, and the ratio to the entire population was observed to be 0.41. While this ratio was 0.31 in Australia in the same year, it was found to be 1.31 in our country.⁽¹⁰⁾ In a 5-year ED admission analysis performed in our country, it was observed that the annual number of patient admissions to a tertiary ED increased gradually.⁽¹¹⁾ In 44.7% of the EDs where the physicians who participated in our study worked, the average monthly number of admissions was 20,000 or

more. The target group of the study was planned as cities with high population density, and the distribution of the participants in the study according to the population rates in these cities and according to previous studies conducted in our country is similar to the distribution of patients in our country.

In ED working practice, pain complaints constitute approximately 70% of admissions. ⁽¹⁾ In a study by Hong et al. examining the characteristics of patients presenting to the ED in South Korea between 2016 and 2018, it was observed that 33.6% of patients were discharged, and 27.9% of these patients were patients with pain. ⁽¹²⁾ In another study conducted in our country, it was reported that 57–75% of the population admitted to the ED due to pain, while door–painkiller time follow-up was performed in 27.6% of the participants in the study, it was observed that this follow-up was never performed in 27.1%. ⁽⁹⁾

In our study, 49.1% of the participants stated that between 50–74% of the admitted patients presented with pain. While 2.9% of the participants always followed the door painkiller time, 21.6% stated that they never followed it. The rates of patients presenting to the emergency department due to pain were found to be similar to the literature. However, it was observed that door–painkiller follow-up was performed at a lower rate compared to the literature. This may be used as an indicator for a decrease in hospital service management.

In 49.7% of the participants' EDs, pain scales were not applied in triage. While 37.4% of the participants mostly used pain scales, 42.5% routinely used pain scales at discharge. The numeric pain scale was the most frequently used scale, with a rate of 75.1%.

It was found that 8.8% of the participants adopted a common authority in pain management.

In the study conducted by Yıldız et al., the behaviors of physicians in certain scenarios on analgesia administration in the ED were examined ⁽⁹⁾. In this study, it was observed that pain relief was postponed in cases such as abdominal pain, chest pain, confusion, and if the patient had an increased comorbid factor. The fact that the patient was pregnant or of advanced age was seen as another reason for postponement. ⁽¹²⁾

The individual characteristics of the patients,

the training of the physician who will administer analgesia, and his/her knowledge of the patient's pathologic condition are important in analgesia management. ⁽¹³⁾

In our study, when the scenarios administered to the participants and their waiting for analgesics were evaluated, it was found that the participants were willing to administer painkillers in the early period in chest pain and epigastric pain, whereas patients could be kept waiting in scenarios where conditions such as abdominal pain, headache, trauma, pregnancy and comorbidity were observed.

Comparison between participant groups showed that GPs preferred to administer analgesia earlier in different scenarios with symptoms such as chest pain, epigastric pain, headache, flank pain, back pain, and comorbid conditions. Significant differences were also observed between the early administration of analgesia and the professional experience of the participants. In the comparison made on abdominal pain, epigastric pain, traumatized pregnant women, headache, flank pain, and geriatric patient pain, those with more professional experience were more likely to delay the administration of analgesics.

The basis of analgesic administration is the individual experience of the physicians, their educational status, and the patient factor. As found in our study, there are significant differences in analgesia delaying behaviors for physicians with different educational backgrounds.

In our study, the most common route of analgesic use was the intravascular route, with a rate of 56%. In the study conducted by Yıldız et al., the intravenous route preference rate was 57.5%. ⁽⁹⁾

The American Heart Association (AHA) recommends the use of opioids for pain control in patients presenting with chest pain. ⁽¹⁴⁾ In a review by Yan et al., it was emphasized that opioid analgesics were frequently used in EDs for patients with chest pain. ⁽¹⁵⁾ In a study on acute abdominal pain, Shabbir et al. found that analgesia was administered to patients in an average of 1.4 hours. It was observed that patients with lower pain levels waited longer for analgesia. NSAID was found to be the most commonly preferred analgesic method. ⁽¹⁶⁾

In the study conducted by Yıldız et al., it was observed that NSAIDs were used as the first

choice in cases such as headache, low back pain, side pain, limb pain, and dysmenorrhea.⁽⁹⁾ In the study conducted by Çetin et al. in 2021, the physicians mainly ordered NSAIDs (67.9%), and opioid analgesics were the most frequently administered analgesic if the second application was required. Also, the most frequently prescribed analgesics were NSAIDs in 44% of cases.⁽¹⁷⁾

In our study, NSAIDs were the first preferred analgesic in cases such as headache, low back pain, renal colic, extremity pain, and dysmenorrhea in patients followed up in the ED, and NSAIDs constituted the first drug group prescribed at discharge. Acetaminophen was the most commonly used analgesic for elderly patients, pregnant patients, pediatric patients, and chest pain, and acetaminophen was the most commonly prescribed analgesic agent at discharge. Morphine use by EMSs and EMAs was significantly higher in patients with chest pain than in GPs.

Analgesic recommendations in the literature and previous studies were found to be similar to the practice and prescribing preferences in our study.

While the use of opioid analgesics was significantly higher in EMSs and EMAs compared to GPs in burn patients, it was observed that GPs were more hesitant in the use of opiate analgesics in emergency practice, and the most important hesitation was the risk of respiratory depression.

Common side effects of opioid administration include sedation, dizziness, nausea, vomiting, constipation, physical dependence, tolerance, and respiratory depression. Physical dependence and addiction are clinical concerns that may prevent appropriate prescribing and thus inadequate pain management. When using opioid group drugs, it is important to be controlled and to consider the risk of addiction.⁽¹⁸⁾

The use and control of opiate use and control was observed more prominently for EMSs, who have deeper knowledge about pain management in the ED by receiving specialized training on patient management, and EMAs, whose training in this field continues, compared to GPs. Possible side effects mentioned in the literature were also observed as the most important reservations in our study.

As in our study, it has been shown that correct analgesic use is more accurate as the level of physician education increases. In the study conducted by Jones et al., it was shown that pain management was more accurate when correct analgesic use was taught with pain management training programmes, which supports our study.⁽¹⁹⁾

This study by Ali et al. has demonstrated the importance and necessity of correct analgesic use in the ED. In addition, in the light of these scientific studies, we aimed to show how the use of analgesics in EDs by doctors of different seniority varies according to the patient and the type of pain.⁽²⁰⁾

5. CONCLUSION

NSAIDs are the most preferred painkillers for headache, low back pain, extremity pain, and dysmenorrhea, while acetaminophen is the second most preferred painkiller for burn patients, followed by fentanyl. In discharge prescriptions, NSAIDs were the first choice for headache, low back pain, abdominal pain, renal colic, extremity pain, burns, and dysmenorrhea. EMSs and EMAs preferred fentanyl more frequently for abdominal pain and burns compared to the GP group. Morphine use by EMSs and EMAs was significantly higher in patients with chest pain compared to GPs. In discharge prescriptions, EMAs and EMSs frequently chose acetaminophen for abdominal pain, while GPs chose NSAIDs.

In the light of these findings, it is noteworthy that there is no standardization in terms of pain management in EDs, the use of pain scales is low, and due to the lack of standards in this process, both the experiences of the patient presenting with pain and the training and experience of the physician managing the pain appear as important parameters in treatment. It is seen that this situation affects both patient satisfaction and ED functioning.

Emergency clinicians have an important responsibility to relieve pain in a timely, effective, and safe manner using all available modalities. Increased knowledge and skills of emergency clinicians in pain management have resulted in the judicious use of opioids. Standardisation is required for emergency clinicians to have confidence in evidence-based pain management and to incorporate it into their daily practice.

It is necessary to identify the problems that cause differences in pain management, which has a very important place for emergency services, to carry out studies to solve the problems and to establish a standard in this regard.

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