MEDICAL SCIENCE

To Cite:
Alshammeri AF, Alshammari NK, Alrashidi LA, Alrashidi IA, Alreshidi AA, Albujaydi AA. Assessment of pain at emergency department depending on factors and patient satisfaction. *Medical Science* 2023; 27: e235ms3023.
doi: https://doi.org/10.54905/disssi/v27i135/e235ms3023

Authors' Affiliation:
[1]Department of Radiology Medicine, College of Medicine, University of Hail, Saudi Arabia
[2]Student, College of Medicine, University of Hail, Saudi Arabia
[3]Department of Emergency Medicine, King Fahd Specialist Hospital, Buraydah, Saudi Arabia
[4]Department of Internal Medicine, King Khalid Hospital, Hail, Saudi Arabia
[5]Department of Emergency Medicine, Prince Mohammed Medical City, Al Jouf, Saudi Arabia

Peer-Review History
Received: 27 April 2023
Reviewed & Revised: 02/May/2023 to 18/May/2023
Accepted: 20 May 2023
Published: 23 May 2023

Peer-review Method
External peer-review was done through double-blind method.

Medical Science
pISSN 2321–7359; eISSN 2321–7367

Assessment of pain at emergency department depending on factors and patient satisfaction

Amirah Fahad Alshammeri[1], **Nawa Khalid Alshammari**[2], **Luluah Abdullah Alrashidi**[2], **Ibrahim Abdullah Alrashidi**[3], **Ahmed Abdullah Alreshidi**[4], **Abdalelah Ali Albujaydi**[5]

ABSTRACT

Background: Acknowledge the assessment of pain in patients who have been to the ED (emergency department) in hail city and other factors related to their visit. *Objective:* This study aims to correlate patients' pain scores with their reason for the emergency room visit and identify factors that are involved in pain management and patient satisfaction at the ED in Hail region, Saudi Arabia. *Material and Methods:* The study was carried out over a period of 6 months and conducted using an electronic questionnaire that was distributed to all consenting adults who resided in hail region. SPSS version 25 for Mac was used to analyze the data. *Results:* There were 442 participants who signed up for the study and returned the questionnaire, 355 (80.3%) of whom were female and 348 (78.7%). Eighty-two percent of participants have been to a government hospital. Among this group, 374 (84.6%) were transported privately and the majority received care within 10–20 minutes of arrival. *Conclusion:* A lower pain score at discharge and a shorter treatment wait time were both linked to higher satisfaction rates.

Keywords: Pain score, emergency department, satisfaction rate.

1. INTRODUCTION

According to studies done by Mc-Caig and Nawar, (2000) and Tompkins et al., (2017) pain is frequently referred to as the fifth vital sign and the majority of emergency department (ED) visits are related to this reason. Even though that pain management is fundamental in Emergency Department it is still commonly mistreated (Dale and Bjørnsen, 2015). The NRS (Numerical Rating Scale) has been stated as the easiest to use for general purposes, with good sensitivity for adult purposes (Karcioglu et al., 2018). Pain measurement and analgesia administration within specific timeframes of 30 minutes from arrival is extremely recommended, studies show the negative effect of

prolonged waiting times for patients without any pain management or assessment at the time of the visit (Hatherley et al., 2016).

Pain relief must be a priority of emergency department, to accomplish better serves for the patients and building stronger relationship filled with trust in the medical profession, as a recent study concluded that a communication between patients and health care providers has resulted in an increase of satisfaction therefore improving patients pain levels (Taylor et al., 2015). Due to the subjective nature of pain, it is reported that pain scores differ from patient to patient even with patients who have the same diagnosis (Marco et al., 2006). Oligoanalgesia, which is still a problem in emergency departments today, is typically characterized by inadequate use of analgesics when there is a legitimate indication for it (Helm et al., 2020).

One study even noted that at least 50% of patients with acutely painful conditions were not prescribed analgesics at the time of discharge (Guru and Dubinsky, 2000). It is believed that having a clear cause of pain affects health care providers' decision about reliving the pain more than the patient's subjective report of the pain (Rupp and Delaney, 2004), some physicians in the emergency department would rather withhold the administration of pain analgesics as they believed it may interfere with the surgical consultation in cases of acute abdomen (Wolfe et al., 2000). The purpose of this study is to determine whether there is any relationship between age, gender and environmental factors and patient pain scores in the Hail region of Saudi Arabia. It also seeks to identify factors that are involved in pain management and patient satisfaction at the emergency room before and after discharge.

2. METHODS AND MATERIALS

Study design

It is a cross-sectional observational study conducted at Hail University, Saudi Arabia.

Study setting

The study was carried out over a period of 8 months, from October 1st, 2022, to March 15th, 2023. Ethical approval was obtained from the ethical committee at the University of Hail (Number H-2022-373). Upon accepting their participation in the study, each participant provided informed consent. Consent was obtained from all the participants once they agreed to be part of the study.

Study questionnaire

The questionnaire was created by the authors since there was no suitable reference.

The questionnaire consisted of:

Closed questions to collect information about age, gender, marital status, nationality, education level and employment status

Open questions to determine their reason for the ED visit and what emergency department they visited

Scale-based questions using the Numerical Rating Scale for pain assessment to determine the scale of pain when entering the ER, after receiving treatment and to measure the satisfaction rate of the provided service

Study sample and population

This study targets all emergency departments in the Hail region, with a sample of 442 participants who undertook the online questionnaire. All the participants have consented once they agreed to be part of the study.

Inclusion/exclusion criteria

All consenting ED (emergency department) patients who reside in the Hail region were eligible for this study. Exclusion criteria included non-Hail residents below the age of 18, patients with the inability to understand the questions in English or Arabic, patients unable to give consent and patients who refused to participate.

Data collection

Data collection has been done through an electronic questionnaire that was distributed to patients who visited the ED recently.

Data analysis

Utilizing SPSS version 25 for Mac, data were extracted, coded and analyzed. A P-value of 0.05 was used for statistical significance in all tests. The chi-square test and Fischer's exact results were used to correlate between nominal and nominal variables. Any participants who were less than 18 years old or outside of Hail City were excluded from the analysis.

3. RESULTS

442 participants have joined our study and completed the questionnaire, of whom 355 (80.3%) were females and 348 (78.7%) were aged between 18 and 30 years old. Participants with a college degree were the majority (73.1%), while those who were illiterate were only 9 (2%). More details about the demographics of this cohort are found (Table 1).

Table 1 Socio-demographic data of the participants (n=442)

Characteristics	No.	%
Gender		
Male	87	19.7
Female	355	80.3
Age		
18-30	348	78.7
31-45	50	11.3
46-65	38	8.6
More than 65	510	1.4
Nationality		
Saudi	423	95.7
Non-Saudi	19	4.3
Educational level		
Illiterate	9	2
Elementary school	6	1.4
Intermediate school	3	0.7
High school degree	97	21.9
Collage degree	323	73.1
Higher educations	4	0.9
Marital status		
Single	327	74
Married	100	22.6
Widowed	15	3.4
Occupation		
Student	287	64.9
Employed	73	16.5
Unemployed	66	14.9
Retired	16	3.6

Regarding the information about the ER visit, most participants have visited a government hospital (82.4%). Out of this cohort, 374 (84.6%) were brought by private transportation and the majority received the treatment within 10–20 minutes of arrival. In addition, the participants rated their overall satisfaction rate as "satisfied" (Table 2) (Figure 1).

Table 2 Information regarding the emergency department visit (n=442)

Characteristics	No.	%
Which hospital did you visit?		
Governmental hospital	364	82.4
Private hospital	48	10.9
Clinic	30	6.8
Way of transportation		
Ambulance	19	4.3
Private transportation	374	84.6
Referral from another hospital	49	11.1

The waited time before receiving the treatment		
Immediate treatment	91	20.6
10-20 minutes	135	30.5
21-30 minutes	75	17
31 minutes to 60 minutes	67	15.2
More than 60 minutes	74	16.7
When did you visit the ER?		
Morning	144	32.6
Evening	182	41.2
Night	116	26.2
Pain score when visiting the ER (Mean ± SD)	5.44 ± 2.51	p-value < 0.001
Pain score at discharge from the ER (Mean ± SD)	3.93 ± 2.69	
Overall satisfaction rate?		
Unsatisfied	79	17.9
Neutral	105	23.8
Satisfied	258	58.4

According to Table 3, the overall satisfaction rate is correlated with the sociodemographic data. It is shown that, in terms of gender, females have a higher satisfaction rate than males (p-value = 0.024). Also, non-Saudis have a higher satisfaction rate than Saudis (p-value = 0.043). In addition, high school degree holders have the highest satisfaction rate among other educational levels, while illiterate individuals have the lowest (p-value = 0.018). Age, marital status and occupation were not significantly associated with the overall satisfaction rate.

Table 3 Socio-demographic data and the relation with overall satisfaction (n=442)

Characteristics	Satisfied	Neutral	Unsatisfied	p-value
Gender				
Male	40	26	21	0.024*
Female	218	79	58	
Age				
18-30	205	83	60	0.527
31-45	26	10	14	
46-65	23	10	5	
More than 65	4	2	0	
Nationality				
Saudi	246	98	79	0.043*
Non-Saudi	12	7	0	
Educational level				
Illiterate	3	6	0	0.018*
Elementary school	4	2	0	
Intermediate school	2	1	0	
High school degree	67	12	18	
Collage degree	180	83	60	
Higher educations	2	1	1	
Marital status				
Single	189	82	56	0.362
Married	60	18	22	
Widowed	9	5	1	
Occupation				

Student	175	67	45	0.238
Employed	36	21	16	
Unemployed	35	16	15	
Retired	12	1	3	

In Table 4, you can see the results of the emergency department visit and the overall satisfaction level. The authors found that private visitors have higher satisfaction than those visiting governmental hospitals or clinics (p-value = 0.011). Also, a lower waiting time for treatment is associated with a higher satisfaction rate (p-value < 0.001). The mode of transportation and the time spent visiting the ER were not significantly associated with the overall satisfaction rate.

Table 4 Emergency department visit and its relation to the overall satisfaction rate (n=442)

Characteristics	Satisfied	Neutral	Unsatisfied	p-value
Which hospital did you visit?				
Governmental hospital	203	87	74	0.011*
Private hospital	32	14	2	
Clinic	23	4	3	
Way of transportation				
Ambulance	8	7	4	0.148
Private transportation	226	81	67	
Referral from another hospital	24	7	8	
The waited time before receiving the treatment				
Immediate treatment	78	11	2	< 0.001*
10-20 minutes	95	33	7	
21-30 minutes	43	18	14	
31 minutes to 60 minutes	25	27	15	
More than 60 minutes	17	16	41	
When did you visit the ER?				
Morning	82	40	22	0.179
Evening	108	34	40	
Night	68	31	17	

Figure 1 illustrates the reasons for visits to the emergency departments and Figure 2 illustrates the mean pain score (CI = 95%) for the patients before and after discharge in relation to the overall satisfaction rate. The results demonstrate that patients who were satisfied had a mean pain score of 5 at the beginning of the visit and 3 after discharge, while patients who were neutral in their satisfaction had a mean pain score of 5 at the beginning of the visit and 4 after discharge. Patients who weren't satisfied had an average pain score of 6 before discharge and 5 after.

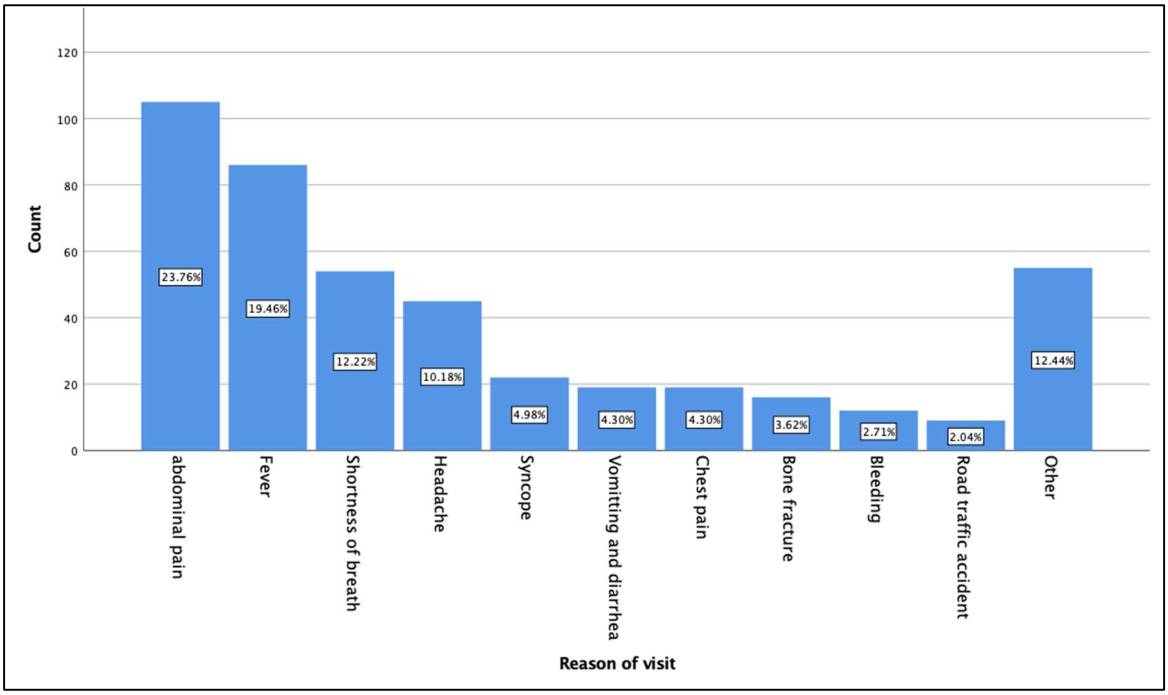

Figure 1 Reasons of visits to ER

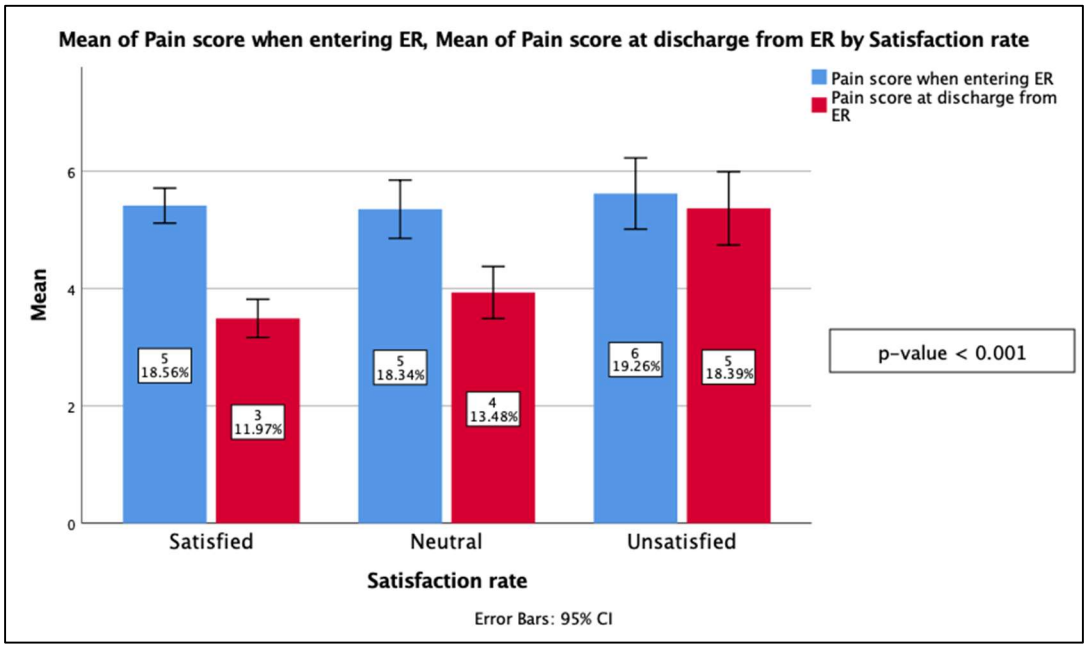

Figure 2 Mean pain score before and after discharge related to satisfaction rate

4. DISCUSSION

The most common complaint is pain and it is the most common reason to visit the emergency department (Marco et al., 2006). The pain can be classified into acute and chronic pain, but most of the cases present in emergencies are in the acute stage, according to previous study. The reasons that make a patient visit the emergency room are many, including abdominal pain, fever and shortness of breath, headache, bone fracture, accidents and others. As compared to other studies, this one show that abdominal pain has the highest pain scores and chest pain has the lowest pain scores (Marco et al., 2012). Other causes of pain vary in percentage compared to other studies (Marco et al., 2012).

For assessing pain, different scales can be used, such as a verbal grading scale, a numerical rating scale and an analog rating scale (Brown et al., 2018). In the literature, the most sensitive scale is the numerical rating scale, which was used to assess the pain in our research (Brown et al., 2018). The numerical rating scale can range from 0 to 10, which defines zero as the lowest level of pain

and 10 as the highest level of pain. In our research, we used the self-reported pain score and comparing it to other studies shows that there is no association between the vital sign and the medical staff's reported pain score (Helm et al., 2020). It is important to assess the pain score before and after pain management in the emergency department for monitoring satisfaction, like in our study (Guru and Dubinsky, 2000). In this study, it was noticed that neither the pre-hospital nor the post-hospital pain levels differed significantly.

Like our research, the assessment and treatment of pain in the emergency department are adequate in most hospitals (Dale and Bjørnsen, 2015). Pain management, on the other hand, is inadequate in some literature and should be focused on strategies to improve pain management. According to studies Hatherley et al., (2016) and Karcioglu et al., (2018) patients' satisfaction with pain management methods like analgesia increased. On the other hand, the satisfaction of pain management is inadequate for many reasons and one of the reasons is inadequate clinical quality for evaluated pain scores and management (Taylor et al., 2015). Patient characteristics that affect pain management include age, gender and the source of the pain. As compared to other studies, our study showed conflicting results in pain management and satisfaction, but females had a higher satisfaction rate and pain management than males. Other factors like age, marital status and occupation are not related to satisfaction as compared to other studies.

It is important to assess how time-consuming it is to give anglaise, as seen in some reviews (Rupp and Delaney, 2004). Similar to other studies, the time it takes to receive the treatment is 10–20 minutes, which is less than the longest time they had to wait for pain medication (Mc-Neill et al., 1998). In comparison to another study, emergency physicians were shown to be multitaskers, from examining patients to prescribing treatment. There are pharmacological and non-pharmacological ways to deal with pain and both can be used when indicated (Follin and Charland, 1997).

Limitations

We collected more than those registered but for some reasons, they were deleted.

This research is focused on a Hail city and does not talk about the emergency departments in the regions of the kingdom of Saudi Arabia.

5. CONCLUSION

Reduced pain score on discharge was associated with a higher satisfaction rate as well as lower waited time of treatment is associated with higher satisfaction rate that is contributed to patients preferring to visit private hospitals where they receive immediate treatment thus their satisfaction level was higher. Regarding the reason of visit to the emergency department, most patients presented with abdominal pain (23.76%) and fever (19.46%). Overall satisfaction was not significantly influenced by age, marital status or occupation.

Acknowledgement

We thank the participants who were all contributed samples to the study.

Author Contributions

Research, study design, data collection, statistical analysis, writing the original draft, reading and editing the final manuscript were all conducted by all authors. All writers reviewed and approved the final manuscript. The final manuscript was read and approved by all authors.

Ethical approval

The study was approved by the Medical Ethics Committee of The Research Ethics Committee (REC) At University of Hail (Ethical approval code: Number H-2022-373).

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study.

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

REFERENCES AND NOTES

1. Brown T, Shetty A, Zhao DF, Harvey N, Yu T, Murphy M. Association between pain control and patient satisfaction outcomes in the emergency department setting. Emerg Med Australas 2018; 30(4):523-529. doi: 10.1111/1742-6723.12945
2. Dale J, Bjørnsen LP. Assessment of pain in a Norwegian Emergency Department. Scand J Trauma Resusc Emerg Med 2015; 23:86. doi: 10.1186/s13049-015-0166-3
3. Follin SL, Charland SL. Acute pain management: operative or medical procedures and trauma. Ann Pharmacother 1997; 31(9):1068-1076. doi: 10.1177/106002809703100917
4. Guru V, Dubinsky I. The patient vs. caregiver perception of acute pain in the emergency department. J Emerg Med 2000; 18(1):7-12. doi: 10.1016/s0736-4679(99)00153-5
5. Hatherley C, Jennings N, Cross R. Time to analgesia and pain score documentation best practice standards for the Emergency Department - A literature review. Australas Emerg Nurs J 2016; 19(1):26-36. doi: 10.1016/j.aenj.2015.11.001
6. Helm M, Hossfeld B, Braun B, Werner D, Peter L, Kulla M. Oligoanalgesia in Patients with an Initial Glasgow Coma Scale Score ≥8 in a Physician-Staffed Helicopter Emergency Medical Service: A Multicentric Secondary Data Analysis of >100,000 Out-of-Hospital Emergency Missions. Anesth Analg 2020; 130(1):176-186. doi: 10.1213/ANE.0000000000004334
7. Karcioglu O, Topacoglu H, Dikme O, Dikme O. A systematic review of the pain scales in adults: Which to use? Am J Emerg Med 2018; 36(4):707-714. doi: 10.1016/j.ajem.2018.01.008
8. Marco CA, Marco AP, Buderer NF, Jones JM. Pain perception among Emergency Department patients with headache: Responses to standardized painful stimuli. J Emerg Med 2007; 32(1):1-6. doi: 10.1016/j.jemermed.2006.05.027
9. Marco CA, Nagel J, Klink E, Baehren D. Factors associated with self-reported pain scores among ED patients. Am J Emerg Med 2012; 30(2):331-337. doi: 10.1016/j.ajem.2010.12.015
10. Marco CA, Plewa MC, Buderer N, Hymel G, Cooper J. Self-reported pain scores in the emergency department: Lack of association with vital signs. Acad Emerg Med 2006; 13(9):974-979. doi: 10.1197/j.aem.2006.04.015
11. Mc-Caig LF, Nawar EW. National Hospital Ambulatory Medical Care Survey: 2004 emergency department summary. Adv Data 2006; (372):1-29.
12. Mc-Neill JA, Sherwood GD, Starck PL, Thompson CJ. Assessing clinical outcomes: Patient satisfaction with pain management. J Pain Symptom Manage 1998; 16(1):29-40. doi: 10.1016/s0885-3924(98)00034-7
13. Rupp T, Delaney KA. Inadequate analgesia in emergency medicine. Ann Emerg Med 2004; 43(4):494-503. doi: 10.1016/j.annemergmed.2003.11.019
14. Taylor DM, Fatovich DM, Finucci DP, Furyk J, Jin SW, Keijzers G, Macdonald SP, Mitenko HM, Richardson JR, Ting JY, Thom ON, Ugoni AM, Hughes JA, Bost N, Ward ML, Gibbs CR, Macdonald E, Chalkley DR. Best-practice pain management in the emergency department: A cluster-randomised, controlled, intervention trial. Emerg Med Australas 2015; 27(6):549-557. doi: 10.1111/1742-6723.12498
15. Tompkins DA, Hobelmann JG, Compton P. Providing chronic pain management in the "Fifth Vital Sign" Era: Historical and treatment perspectives on a modern-day medical dilemma. Drug Alcohol Depend 2017; 173 Suppl 1(Suppl 1):S11-S21. doi: 10.1016/j.drugalcdep.2016.12.002
16. Wolfe JM, Lein DY, Lenkoski K, Smithline HA. Analgesic administration to patients with an acute abdomen: A survey of emergency medicine physicians. Am J Emerg Med 2000; 18(3):250-253. doi: 10.1016/s0735-6757(00)90114-1