Refusal of pain medication is frequent in a Danish emergency department

Gustav Valentin Blichfeldt Sørensen[1, 3], Jakob Stegger[1, 2], Jørn Møller Munkhof[3] & Erika Frischknecht Christensen[1, 2]

ABSTRACT

INTRODUCTION: Pain is a frequent symptom in patients attending emergency departments (EDs), but it remains unknown whether all patients with pain want pain-relieving treatment. The primary aim of this study was to investigate the frequency and intensity of pain. The secondary aim was to establish the proportion of patients wanting pain-relieving treatment.

METHODS: A cross-sectional study was performed at Aalborg University Hospital, Denmark. We interviewed all patients attending the ED using a structured questionnaire to evaluate patient and pain characteristics as well as pain management in the ED. Pain intensity was evaluated using the Verbal Numerical Rating Scale (VNRS).

RESULTS: A total of 349 patients were included. Pain was present in 233 (67%) cases, and the median VNRS score (interquartile range) of patients with pain was 4 (2-6). In all, 100 (43%) patients had mild pain (VNRS 1-3) and 133 (57%) had moderate to severe pain (VNRS 4-10). Furthermore, 174 of patients with pain (n = 233) were asked if they wanted pain relieving treatment. Only, 59 (34%) of these patients were interested in this.

CONCLUSIONS: Pain was frequent, as it was seen in two thirds of non-critical adult patients in the ED. The majority of patients with pain had moderate to severe pain, but only one third of the patients with pain wanted pain-relieving treatment.

FUNDING: none.

TRIAL REGISTRATION: not relevant.

Pain is a frequent complaint in the emergency department (ED) with studies reporting frequencies of pain in the 45-78% range [1-7]. However, literature regarding this in a Danish setting is sparse. Only three studies having reported frequencies of pain at arrival or during treatment at Danish EDs. In these studies, pain was reported by 36-58% of patients [8-10]. These studies were, however, performed with another primary objective [8-10], in a prehospital setting upon arrival to the hospital [9], or they only reported pain when stated as a primary symptom [10]. Nonetheless, these findings indicate that pain may be frequent. It is of great importance to be aware of this to treat pain optimally. However, even though pain is frequent, its presence does not imply that all patients with pain want pain-relieving treatment [11]. This aspect has not been a focus area in Danish studies.

In Denmark, The Centre for Patient Experience and Evaluation [12] conducts the National Danish Survey of Patient Experiences in Emergency Departments, which explores patient-reported outcome measures in Danish EDs on an annual basis. In 2015, the survey investigated satisfaction with the treatment of pain in 7,340 patients. This survey identified lack of pain-relieving treatment as a potentially serious problem as 27% of responding patients felt that their need for pain relief had not been met [13]. Similar results were found in the survey both in 2016 and 2017 with the same problem present in 26% and 28% of the responding patients, respectively [14, 15]. However, it is important to assess the magnitude of the problem in terms of the prevalence of pain in the ED and take into account the extent to which ED patients with pain want pain-relieving treatment, which was not accounted for in the national survey.

The primary aim of this paper was to investigate the frequency and intensity of pain. A secondary aim was to establish the proportion of patients who wanted pain-relieving treatment in a Danish ED. We hypothesised that pain of varying intensity is a frequent symptom in the ED, and that not all patients with pain want pain-relieving treatment.

METHODS

Design

This was a cross-sectional study based on patient interviews.

Setting

The study was performed in the Emergency Department of Aalborg University Hospital, Aalborg, Denmark. The department is a level 1 trauma centre with an annual ED census of approximately 50,000 patients.

Study population

The study comprised adult patients attending the ED along with those referred by a general practitioner or ambulance from 8.00 a.m. to 3 p.m. on weekdays from 17 October to 11 November 2016; a total of 19 days.

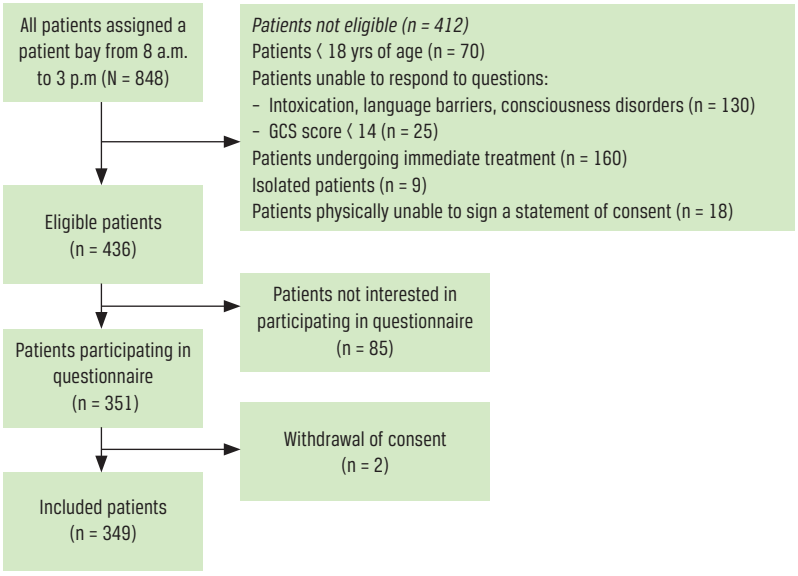
ORIGINAL ARTICLE

1) Department of Clinical Medicine, Centre for Prehospital and Emergency Research, Aalborg University
2) Department of Anaesthesiology and Intensive Care Medicine, Aalborg University Hospital
3) Trauma and Emergency Department, Aalborg University Hospital, Denmark

Dan Med J 2018;65(12):A5521

FIGURE 1

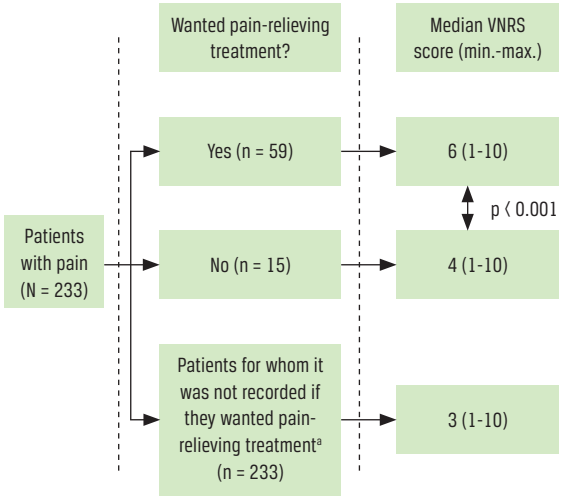
Patient inclusion process at the Emergency Department, Aalborg University Hospital.



GCS = Glasgow Coma Scale.

FIGURE 2

Patients wanting pain-relieving treatment.



a) Due to an error in the questionnaire, for 59 patients it was not recorded if they wanted pain-relieving treatment. VNRS = Verbal Numeric Rating Scale.

Only one research assistant was able to perform data collection, so the period was chosen for practical reasons due to time limits. Patients were included if assigned to a patient bay, to ensure privacy, and only patients aged 18 years of age or more were included. We excluded patients who were ED staff members as well as patients undergoing immediate treatment due to critical illness and patients who were unable to complete a questionnaire or sign a statement of consent.

Data collection

An electronic questionnaire was developed and used to enquire about patient and pain characteristics.

Patient characteristics included age, gender, speciality (internal medicine, orthopaedics and others) and triage level according to the Adaptive Process Triage system [16].

Pain was defined as the word pain and other equivalent words: stinging, burning, cramping, tightening, pressing, soreness, tenderness and aching. Pain did not comprise the experience of discomfort, anxiety or emotional pain. Patients were asked to score their pain according to a verbal numerical rating scale (VNRS) [17] ranging from 0 to 10, with 0 being no pain at all and 10 being the worst imaginable pain experienced. Pain intensity was reported as mild (VNRS 1-3), moderate (4-6) or severe (7-10).

Patients were asked whether pain was their chief complaint and whether they had been offered pain-relieving treatment and accepted it – or had not been offered treatment but wanted such treatment. Pain-relieving treatment was defined as either pain-relieving medication, ice-packages, support bandages or elevation. The duration of pain was defined as the time span from the pain was first perceived by the patient and until the interview was performed, including constant and recurrent pain. Duration was classified into four categories: ≤ 24 h, > 24 h up to 1 wk, > 1 wk up to 1 mo. and ≥ 1 mo.

The VNRS has been used and validated in various settings. The other parts of the questionnaire were not validated but revised through an iterative process in the research group, and pilot tested during the first two days of recruitment in order to test if patients understood the questions.

Patients presenting twice or more to the ED were included and handled as first-time presenters. If patients attended the ED outside of the time span of inclusion, the day before the interview and reattended the ED the next day within the time period, they were asked to include their entire course of treatment in their evaluation when answering the questionnaire.

Data collection was performed by an independent research assistant (the first author) who read out the questionnaire for patients and noted their answers. Patients were approached as soon as possible after ED nurses' initial triage. This allowed nurses to respond to patients who were in pain and to offer pain-relieving treatment. Independency from ED nurses was secured by waiting for the nurses to leave the patient bay before enquiring about consent for participation and applying the questionnaire. No attempt was made to keep staff unaware of the purpose of the study or to intervene in the courses of treatment. No measures were taken to ensure independence from relatives.

Statistical analysis

Patient characteristics were analysed using standard descriptive statistics. If non-normally distributed, continuous and discrete data were accounted for using medians with either interquartile range or minimum and maximum, as appropriate. Comparison of medians between independent groups was done using the Wilcoxon rank sum test. When normally distributed, the data were expressed as mean ± standard deviation and compared using the two-sample t-test with equal variances. The assumptions for this were checked using QQ-plots and histograms. Equal variances were checked using the Welch test. Categorical data were displayed using proportions. Estimates are given with exact 95% confidence intervals (CI). Comparison of proportions between independent groups was done using the chi-squared test. A p-value lower than 0.05 was considered statistically significant. The statistical analyses were performed using R software version 3.3.2 for Mac OS (R Core Team, Vienna, Austria). We used a convenience sample to include as many patients as possible in the study period.

Ethics

Written informed consent was obtained from all patients. The local ethics committee was consulted, and approval of the study was not required for this study (according to the Danish Act on the Scientific Ethical Committee System (Act no. 593, section 14, subsection 2)). Approval was obtained from the Danish Data Protection Agency (record number 2008-58-0028).

Trial registration: not relevant.

RESULTS

Figure 1 summarises the inclusion of the patient population. **Table 1** summarises the patient characteristics. Three patients presented twice in the ED. Among all 349 patients, 233 (67%; 95% CI: 61.5-71.7%) had pain at arrival or during their stay in the ED. **Table 2** summarises pain characteristics in these patients. A total of 133 (57%; 95% CI: 50.5-63.5%) of the patients with pain (n = 233) had a moderate to severe pain intensity (VNRS score > 3). 52% (95% CI: 45.7-58.9%) of all patients with pain had pain for more than 24 h before attending the ED.

Figure 2 summarises patients wanting pain-relieving treatment. Due to an error in the questionnaire, only 174 of 233 patients with pain recorded if they wanted pain-relieving treatment. Thus, no data were recorded on this aspect for 59 patients who were in pain.

Among the 174 patients with pain, only 59 (34%; 95% CI: 26.9-41.4%) wanted pain-relieving treatment. These patients had significantly higher VNRS scores ($p < 0.001$) and reported pain as their primary complaint more often ($p = 0.015$). Post hoc-analyses showed no difference in age ($p = 0.99$), gender ($p = 0.06$) or duration of pain ($p = 0.12$) between patients wanting pain-relieving treatment and patients not wanting pain-relieving treatment.

Of those who reported pain, 62 (58.5%; 95% CI: 48.5-67.9%) with a VNRS score above 3 (n = 106) did not want pain-relieving treatment, and 15 (15%; 95% CI: 12.9-33.8%) patients with a VNRS score equal to or less than three (n = 68) wanted pain-relieving treatment.

Among the 59 patients with pain whose desire for pain relieving treatment was not stated, 32 reported mild pain (VNRS-score 1-3), whereas 20 patients reported moderate (VNRS score 4-6) and seven patients reported severe pain (VNRS score 7-10). Most, 70%

TABLE 1

Characteristics of patients in the Emergency Department of Aalborg University Hospital (N = 349).

Age, yrs, mean ± SD	56.6 ± 19.7
Female, n (%)	164 (47)
Department, n (%)	
Internal medicine[a]	198 (56.7)
Orthopaedics	121 (34.7)
Other surgical	30 (8.6)
Triage level n (%)	
1: "Red"	16 (4.6)
2: "Orange"	88 (25.1)
3: "Yellow"	73 (21)
4: "Green"	85 (24.3)
5: "Blue"	87 (25)
Patients with pain in ED, n (%)	233 (67)

ED = Emergency Department; SD = standard deviation.
a) Including cardiology and neurology.

TABLE 2

Pain characteristics of patients with pain in the Emergency Department of Aalborg University Hospital (N = 233).

VNRS score, n (%)	
1-3: mild pain	100 (43)
4-6: moderate pain	84 (36)
7-10: severe pain	49 (21)
VNRS score, median (IQR)	4 (2-6)
Duration of pain, n (%)	
≤ 24 h	111 (48)
⟩ 24 h-1 wk.	73 (31)
⟩ 1 wk.-1 mo.	29 (12)
⟩ 1 mo.	20 (9)

ED = Emergency Department; IQR = interquartile range; VNRS = Verbal Numerical Rating Scale.

(n = 41), of these patients did not inform the ED staff of their pain.

The patients stated as reasons for not wanting pain-relieving treatment that they did not find that the pain was unbearable or that they were pregnant.

DISCUSSION

In this cross-sectional study, 349 adult ED patients were included. Pain was present in 233 (67%; 95% CI: 61.5-71.7%) patients with a median VNRS score of four. 43% experienced mild pain and 57% had moderate to severe pain. Also, 174 of patients with pain (n = 233) were asked if they wanted pain-relieving treatment. Only one third (34%; 95% CI: 26.9-41.4%) of these patients wanted pain-relieving treatment.

Strengths and limitations

This was a cross-sectional study based on consecutive recruitment and interviews with ED patients. The study included a mixed group of ED patients, including injuries, medical and surgical emergencies, and patients in whom pain was not the primary symptom. This was a single-centre study performed in the course of 19 consecutive working days not accounting for all 24 h of the day. Therefore, pain frequency and intensity may not be the same in other settings, patient case mixes and studies covering other hours of the day. One such study is Friesgaard et al [8], who reported the presence of pain in the ED during full 24-h days for 3 wks and found a lower prevalence of pain than our study. Thus, we may have overestimated the frequency of patients with pain in our sample. Lastly, a serious limitation is that the questionnaire was not validated. Still, the main focus of the study was the VNRS score, which has been applied and validated in several studies [2, 4, 7-9, 11].

Patients were included only if they were assigned a patient bay in order to ensure patient privacy and discretion. Moreover, patients were excluded if immediate treatment was needed. The findings of this study therefore only apply to non-critical patients.

No attempt was made to blind the ED staff, and it cannot be excluded that there was an interest in achieving positive results, i.e. lower pain frequencies, and offering more pain-relieving treatment during the study period.

Due to an error in the electronic questionnaire, 59 of the patients with pain did not report their preference for pain-relieving treatment. The majority of these patients had mild pain, and more than two thirds of the 59 patients did not call attention to their pain to the ED staff. Thus, we consider that this error will likely only have influenced our results to a minor degree.

Comparison with other studies

Three recent studies have investigated pain in Danish EDs. Friesgaard et al [8] performed an observational study at Horsens Regional Hospital, Denmark. Like us, they reported a 53% frequency of pain. In contrast to our study, Friesgaard et al enrolled patients consecutively for 24 h a day during a 3-wk period, which may have yielded a more realistic estimate of pain frequency. In a retrospective review of prehospital medical charts, Friesgaard et al [9] found moderate to severe pain (numerical rating scale > 3) in 58% of 2,348 patients arriving by ambulance at the hospital. Lastly, in the ED at Kolding Hospital, Denmark [10], a cross-sectional study was performed on 9,863 patients to categorise their complaints in order to see how frequent these complaints were. Pain was present as a primary symptom in 36% of patients. This lower frequency may be due to the fact that data were gathered from electronic screens in the ED with patient information written using varying keywords by the attending nurses. This may have caused pain frequencies to be underestimated.

Cross-sectional studies from the USA, Canada and France based on patient interviews consistently found frequencies of pain in the 71-78% range [2, 6, 7]. However, these studies had different sample sizes and study designs and used blinding of the ED staff [2] and inclusion of patients 24 h a day [6]. Furthermore, contrary to our study, one reported pain as present only if it was the primary reason for attending the ED [2].

Studies from the USA, Brazil and Hong Kong based on patient records found frequencies of pain in the 45-61% range [1, 3-5].

Our study concurs with previous literature in finding pain as a frequent symptom in the ED. However, the presence of pain does not necessarily mean that patients want pain-relieving treatment [11]. The National Danish Survey of Patient Experiences in Emergency Departments reported that 28% of patients felt that their need for pain relief was not met. However, our study found that only one third of 174 patients with pain wanted pain-relieving treatment, mainly because their pain was tolerable without pain medication. This may invite a debate on what a proper ED pain management strategy should be. Should the goal be to treat all patients with pain or should treatment be adjusted to each patient's preferences?

Interestingly, we found that more than half of all patients with a VNRS > 3 did not want pain-relieving treatment; however, we also found that a smaller proportion of patients with pain at VNRS ≤ 3 wanted pain-relieving treatment. This may indicate that a more individual approach to pain-management is needed.

CONCLUSIONS

In summary, pain was a frequent symptom among non-critical adult ED patients, and more than half of them

reported a moderate to severe pain intensity. Only one third of the patients with pain wanted pain-relieving treatment. It would be of interest to investigate patient preferences regarding reasons for both wanting and not wanting pain-relieving treatment in the ED in future research in order to optimise pain management.

CORRESPONDENCE: *Gustav Valentin Blichfeldt Sørensen*.
E-mail: gustav.soerensen@rn.dk

ACCEPTED: 28 June 2018

CONFLICTS OF INTEREST: none. Disclosure forms provided by the authors are available with the full text of this article at Ugeskriftet.dk/dmj

ACKNOWLEDGEMENTS: The authors would like to extend their gratitude to he patients of the Trauma and Emergency Department, Aalborg University Hospital, Aalborg, Denmark, for participating in the study. Furthermore, we are indebted to the staff of the Trauma and Emergency Department, Aalborg University Hospital, Aalborg, Denmark for their participation in the study.

LITERATURE

1. Cordell WH, Keene KK, Giles BK et al. The high prevalence of pain in emergency medical care. Am J Emerg Med 2002;20:165-9.
2. Tanabe P, Buschmann M. A prospective study of ED pain management practices and the patient's perspective. J Emerg Nurs 1999;25:171-7.
3. Chang H-Y, Daubresse M, Kruszewski SP et al. Prevalence and treatment of pain in EDs in the United States, 2000 to 2010. Am J Emerg Med 2014;32:421-31.
4. Wong MT, Ip M, Graham CA. Pain and pain management in a Hong Kong emergency department. Hong Kong J Emerg Med 2011;18:406-11.
5. Caliman RAM, Gatti MFZ, Leão ER. Nursing quality: pain management in the emergency room. J Pain Manag 2009;2:163-8.
6. Tcherny-Lessenot S, Karwowski-Soulié F, Lamarche-Vadel A et al. Management and relief of pain in an emergency department from the adult patients' perspective. J Pain Symptom Manage 2003;25:539-46.
7. Johnston CC, Gagnon AJ, Fullerton L et al. One-week survey of pain intensity on admission to and discharge from the emergency department: a pilot study. J Emerg Med 1998;16:377-82.
8. Friesgaard KD, Paltved C, Nikolajsen L. Acute pain in the emergency department: effect of an educational intervention. Scand J Pain 2017;15:8-13.
9. Friesgaard KD, Nikolajsen L, Giebner M et al. Efficacy and safety of intravenous fentanyl administered by ambulance personnel. Acta Anaesthesiol Scand 2016;60:537-43.
10. Carter-Storch R, Olsen UF, Mogensen CB. Admissions to emergency department may be classified into specific complaint categories. Dan Med J 2014;61(3):A4802.
11. Singer AJ, Garra G, Chohan JK et al. Triage pain scores and the desire for and use of analgesics. Ann Emerg Med 2008;52:689-95.
12. Center for Patient Experience and Evaluation. https://patientoplevelser.dk/center-patient-experience-and-evaluation (24 Oct 2017).
13. The Centre for Patient Experience and Evaluation. National Danish Survey of Patient Experiences - in Emergency Departments 2015. https://patientoplevelser.dk/files/dokumenter/filer/LUPakut/2015/lup_akutmodtagelse_2015_national_rapport_0.pdf (24 Oct 2017).
14. The Centre for Patient Experience and Evaluation. National Danish Survey of Patient Experiences - in emergency departments 2016. https://patientoplevelser.dk/files/dokumenter/filer/LUPakut/2016/lup_akut_2016_national_rapport.pdf (24 Oct 2017).
15. The Centre for Patient Experience and Evaluation. National Danish Survey of Patient Experiences - in emergency departments 2017. https://patientoplevelser.dk/sites/patientoplevelser.dk/files/national-rapport-lup-akutmodtagelse-2017.pdf (7 February 2018).
16. Nordberg M, Lethvall S, Castrén M. The validity of the triage system ADAPT. Scand J Trauma Resusc Emerg Med 2010;18(suppl 1):P36.
17. Bijur PE, Latimer CT, Gallagher EJ. Validation of a verbally administered numerical rating scale of acute pain for use in the emergency department. Acad Emerg Med 2003;10:390-2.