

The PIPER WEEKEND study. Children's and adults satisfaction regarding paediatric pain in Italian Emergency Department

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Abstract

Background. Despite pain being a crucial aspect of urgent-emergency care, the attention of healthcare workers towards this symptom in the Emergency Department (ED) is still inadequate. The aims of this study were to assess children's and their adults accompanier's satisfaction regarding pain management in Italian ED, considering healthcare workers' attention to the symptom as well as the appropriateness and efficacy of treatments received.

Methods. Questionnaires were administered face-to-face by trained interviewers over the period of one weekend in 29 Italian ED. The questionnaires were addressed to children 3-16 years old, assigned a green code at triage, and their adult accompaniers.

Results. Overall, 1581 questionnaires were administered (923 to parents or caregivers, 658 to children). The reported level of attention to pain by the care team was high (57.20%) as was the adults' satisfaction with the pain management (95.01%); a high level of satisfaction was related to the healthcare workers' attention to pain. According to the adults, 73.56% of the healthcare professionals collected accurate information about pain; this was confirmed by the children. Pain was managed by a doctor-and-nurse team in less than half the cases (43.77%). Therapy efficacy was reportedly poor: only 14.01% of children were pain-free when leaving the ED.

Conclusions. Despite increasing understanding of pain and the availability of guidelines and effective analgesics, efficient pain relief in paediatric patients in the ED remains an unfulfilled goal: half of children with pain did not receive any treatments. Therefore the quality of pain management in the ED needs to be improved.

Key words

- emergency department
- child
- pain
- pain management
- questionnaire
- satisfaction

BACKGROUND

Pain is one of the main symptoms reported in Emergency Department (ED) admissions worldwide, with a prevalence of 50-80% in adult and paediatric patients [1] study results demonstrate that only 30-50% of patients receive adequate analgesia. Therefore, in the USA quality indicators have been established by the Centers for Medicare & Medicaid Services (CMS). One third of accesses to the ED each year are for the paediatric population [2] and pain is present in over 80% of these cases, being the main or accompanying symptom [3]. For these reasons, the entire ED care team should be able to provide complete, safe management of pain in children, with adequate assessment, measurement and treatment of the symptom [2].

For too many years paediatric pain has been poorly managed for many reasons: lack of understanding of the neurophysiology of pain in children, scarce experience with analgesic drugs and doses in this population, social-cultural aspects and inadequate training of healthcare staff [4, 5]. However, over the past 25 years, emergency medicine research and literature have progressively increased knowledge regarding safe and effective paediatric pain management strategies, improving awareness that pain management in children should differ from that in adults [2, 6-11]. Indeed, many national and international organisations have developed recommendations, guidelines and standards of practice to improve the quality of paediatric pain control in many settings.

Despite these efforts, healthcare practitioners still do

not give enough attention to pain and much research has documented that the symptom is still undermeasured and undertreated in various settings, including the paediatric ED [12-16]. Furthermore, there is limited knowledge about the impact of current clinical practice regarding pain control on paediatric patients and their family and scarce interest in how parents and children perceive pain management. As a result, the perspectives of patients, parents and adult caregivers on hospital pain management, a strong marker of daily clinical practice, are currently not well documented.

The aim of PIPER (Pain In Pediatric Emergency Room) WEEKEND study was to measure the level of children's and their parents' satisfaction with paediatric pain management in Italian ED, using questionnaires to determine attention to the symptom, and the appropriateness and efficacy of treatments given by healthcare workers.

The study was approved by the Ethics Committees of the coordinating centre and all the participating centres and was performed in accordance with the principles of the Declaration of Helsinki.

METHODS

The face-to-face surveys were carried out by two interviewers in each ED in one weekend (26th and 27th September, 2015) over 12 hours daily (8 am - 8 pm). Capable interviewers trained in social research were selected to administer the validated questionnaires to children evaluated for pain in ED and to their companions. Two questionnaires were developed: one, for the adult caregivers, consisted of 11 questions; the other, with five questions, was for the children. The questionnaire for the adult companions collected data on the localisation of pain in the children, their opinion about the healthcare workers' interest in paediatric pain, waiting times and actions taken (such as the assessment of pain, pharmacological therapy), and the level of overall satisfaction regarding how the child's pain was managed. The second questionnaire evaluated the children's impressions concerning the healthcare professionals' attitude to pain management.

Data computerisation and analysis were carried out at the University "Sapienza" in Rome, using the chi-square test and Cramér's v test. To evaluate whether relationships among variables were present in samples other than that analysed, a p -value indicator was used. A p -value < 0.05 - 0.01 indicates that an association found can be extended to a reference population.

SAMPLE

This survey was carried out in the paediatric emergency services of 29 Italian ED participating in the PIPER project [4]. It was addressed to adult and paediatric subjects. Children aged 3 to 16 years old assigned a green code [17] at triage and the adults accompanying them were interviewed. Overall, 1581 subjects (923 adults and 658 children) were enrolled on discharge from the ED. Almost all the adult companions were parents (97.4%), with the majority being mothers (70.53%). Most of the adults were Italians. The majority of parents/caregivers had a good level of education: about 55% had a high school diploma. The mean age of the children was 6.84 years and there was a prevalence of males (57.33%).

RESULTS

Twenty-nine Italian ED belonging to the PIPER group, present throughout the country, participated in the study (62% in the North, 24% in the Center and 13% in South of Italy). Questionnaires were collected from 923 adults accompanying 658 children.

On the basis of the adults' judgments, the more prevalent sites of pain among children were the head (31.61%) and joints (30.88%).

Findings of questionnaires administered to adults

The adult's opinion about the healthcare workers' attitude to pain was positive: 57.20% of the companions referred a high level of attention to pain in ED by the team care and in 38.03% of cases, the healthcare workers were described as sufficient interested. 73.56% healthcare professionals collected accurate information about the symptom of pain, asking the child whether he or she had pain and, if so, where it was. Only 24.71% of parents reported the use of pain scales: validated instruments for the measurement of pain were more frequently used in the south (39%) and north-east (29%) of Italy.

As far as concerns the treatment of pain 50.60% of caregivers affirmed that no drug was administered to the children, whereas most of the other half (47.56%) referred the administration of pain therapy. In the cases that pain therapy was prescribed, it was administered promptly, in 50.46% of children within 20 minutes and in 32.19% within a few minutes. A geographic difference was found, with pharmacological treatment being administered earlier in ED in the centre and north of the country (Table 1).

Table 1
Waiting time for pharmacological treatment in Italian Emergency Department

Waiting time for pharmacological treatment	Geographic localisation of the 29 Italian ED participating in the study				
	Centre	North-East	North-West	South and Islands	Total
< 20 minutes	75 (78.13%)	68 (63.55%)	45 (26.79%)	33 (50.00%)	221 (50.57%)
20-40 minutes	17 (17.71%)	25 (23.36%)	77 (45.83%)	22 (33.33%)	141 (32.27%)
> 40 minutes	4 (4.17%)	14 (13.08%)	46 (27.38%)	11 (16.67%)	75 (17.16%)
Total	96 (100.00%)	107 (100.00%)	168 (100.00%)	66 (100.00%)	437 (100%)

Chi-square = 76.031 P-value = 0.000 Cramér's V = 0.348

Table 2
Administration of pharmacological treatment in Italian Emergency Department

Pharmacological administration and waiting times	Type of ED		
	General	Paediatric	Total
No	213 (55.61%)	253 (48.56%)	466 (51.55%)
Yes	170 (44.39%)	268 (51.44%)	438 (48.45%)
Total	383 (100.00%)	521 (100.00%)	904 (100.00%)

Chi-square = 4.3965 p-value = 0.036 Cramer's V = 0.0697

Waiting times	General	Paediatric	Total
< 20 minutes	59 (34.71%)	162 (60.67%)	221 (50.57%)
20-40 minutes	69 (40.59%)	72 (26.97%)	141 (32.27%)
40-60 minutes	27 (15.88%)	14 (5.24%)	41 (9.38%)
> 60 minutes	15 (8.82%)	19 (7.12%)	34 (7.78%)
Total	170 (100.00%)	267 (100.00%)	437 (100.00%)

Chi-square = 32.7433 P-value = 0.000 Cramer's V = 0.2737

The responses of caregivers interviewed in the different hospitals of the study highlighted that there was a difference in analgesic use depending on the type of ED, with paediatric ED physicians using pharmacological management of pain more often and more quickly than doctors in general ED (Table 2). Indeed, analgesia was administered in 51.44% of the cases in paediatric ED and among 44.39% of children in general ED; moreover, analgesics were administered in less than 20 minutes in 60.67% of cases in paediatric ED (vs 34.71% in general ED).

As far as concerns the healthcare workers involved in the management of pain, 43.77% of adults referred a combined approach by a physician and a nurse, whereas 40.74% reported that a doctor was the only person involved in the pain management. Once again, a geographic difference was found: in the centre and south of

Italy, the physician is the principal figure involved in the management of pain (54.5% and 49.6%, respectively), whereas in the north of the country, pain is largely managed by a healthcare team (53.6%).

The central role of physicians was more evident among university hospitals, in which 52.96% of the cases were managed exclusively by doctors. Among non-academic hospitals, pain was managed in more than half of cases (53.21%) by a physician and nurse together.

It is important to note that the use of guidelines [18] for the management of paediatric pain at triage was a differentiating factor. In the 23 ED in which guidelines were used, the adult companions perceived not only a greater interest in pain by nurses and physicians but also a more frequent use of pain scales and a stronger tendency for the symptom to be managed by a team of healthcare staff (Table 3).

Table 3
Elements of management of pain and use of guidelines

Aspects of pain management		Presence/absence of guidelines for pain management		
		No	Yes	Total
Interest in paediatric pain	Little	12 (7.50%)	22 (2.92%)	34 (3.72%)
	Sufficient	83 (51.88%)	268 (35.59%)	351 (38.44%)
	A lot	65 (40.63%)	463 (61.49%)	528 (57.83%)
	Total	160 (100.00%)	753 (100.00%)	913 (100.00%)

Chi-square = 26.4610 P-value = 0.000 Cramér's V = 0.1702

Use of pain scale	Presence/absence of guidelines for pain management		
	No	Yes	Total
	No	150 (93.75%)	545 (71.43%)
Yes	10 (6.25%)	218 (28.57%)	228 (24.70%)
Total	160 (100.00%)	763 (100.00%)	923 (100.00%)

Chi-square = 35.4300 P-value = 0.000 Cramér's V = 0.1959

Health care figures involved	Presence/absence of guidelines for pain management			
	No	Yes	Total	
	Physician and nurse	40 (30.38%)	356 (47.53%)	404 (44.54%)
	Only physician	13 (8.23%)	114 (15.22%)	127 (14.00%)
Only nurse	97 (61.39%)	279 (37.25%)	376 (41.46%)	
Total	158 (100.00%)	749 (100.00%)	907 (100.00%)	

Chi-square = 31.5173 P-value = 0.000 Cramér's V = 0.1864

Table 4

Satisfaction of adults concerning healthcare workers' interest in pain

Level of satisfaction	Interest in paediatric pain			Total
	Low	Sufficient	High	
Little	18 (36.36%)	18 (4.32%)	10 (4.07%)	491 (4.07%)
Sufficient	14 (42.42%)	229 (25.95%)	137 (41.85%)	385 (41.85%)
A lot	7 (21.21%)	103 (72.16%)	381 (54.07%)	46 (54.07%)
Total	44 (100.00%)	350 (100.00%)	528 (100.00%)	922 (100.00%)

Chi-square = 247.5937 P-value = 0.000 Cramér's V = 0.3692

There was a good level of satisfaction among parents and caregivers, with almost all the adults stating that they were "very satisfied" (53.25%) or "satisfied enough" (41.76%) with the management of the pain in their children. The level of satisfaction reached 96.80% in the central and northern parts of Italy.

The level of parents' satisfaction was strongly correlated with the interest in pain shown by the healthcare staff: greater attention to the symptom of pain corresponded with the caregivers' judgment being positive more frequently (72.16%, vs 21.21% and 29.68%, respectively sufficient and little interest, Table 4). This finding was confirmed by another: the positive correlation between measurement of pain and levels of satisfaction (p-value = 0.000). Thus, if healthcare professionals measure pain, they will have more positive evaluations (p-value = 0.000). (67.11% vs 49.20% Table 5). Type of ED (paediatric vs general; university vs not university) and caregivers' characteristics (level of education, gender, nationality) were not correlated to the adults' satisfaction.

The levels of accompaniers' satisfaction were positively influenced not only by the healthcare workers' interest in pain and by its measurement, but also by the management of the symptom by the nurse-physician care team. Team work was appreciated a lot, with caregivers being more satisfied when their children's pain was managed by a healthcare team (p-value = 0.000).

Findings of questionnaires administered to children

Almost all the children (95.34%) were asked questions aimed at localising their pain and 45.34% of children added that the healthcare staff tried to understand the intensity of their pain. In accordance with their parents or caregivers, children referred a more frequent use of pain scales in the south of Italy (64.9%).

The survey among the children also confirmed that

healthcare professionals in paediatric ED had a greater tendency to measure pain (51%) than had their colleagues in general ED (40%).

Another finding corroborated was the strong interest of healthcare staff in pain. Half of the children (49.84%) judged the healthcare professionals "very interested" in pain and most of the other half (45.81%) considered them "interested enough".

However, the children's responses revealed serious inadequacy regarding the effectiveness of the interventions. Indeed, although more than half of the paediatric patients (61.8%) reported that they had less pain on discharge from the ED than they had had on admission, the decline in pain intensity was significant in little more than one-fifth of the children (22.98%). Furthermore, 23.14% of patients, a far from negligible percentage, declared that the pain they perceived on leaving the ED was as strong as that at the time of entering the department (Figure 1).

DISCUSSION

In this study children's and their parents' and satisfaction with ED management of pain, as an accepted component of quality assurance, was monitored. Unfortunately, inappropriate pain relief for children in the ED has been documented repeatedly [19-21].

We found half of the children with pain (50.60%) did not receive any analgesic medications in the ED, confirming the undertreatment of pain in children in the context of emergency care [22-26]. This factor cannot be separated from physicians' perception of pain. Pain is a personal experience, diagnostic judgments and treatment decisions depend on a physician's perception of pain [27]. However, physicians generally give lower ratings to patients' pain than do the patients themselves [28]. When the pain was treated, the mean time to provide the analgesia was very short: in 50.46% of cases

Table 5

Satisfaction of adults concerning use of pain scales by healthcare workers

Level of satisfaction	Interest in use of pain scales		Total
	No	Yes	
Little	35 (5.09%)	4 (1.75%)	39 (4.26%)
Sufficient	314 (45.71%)	71 (31.14%)	385 (42.08%)
A lot	338 (49.20%)	153 (67.11%)	491 (53.66%)
Total	687 (100.00%)	228 (100.00%)	915 (100.00%)

Chi-square = 23.3408 P-value = 0.000 Cramér's V = 0.1597

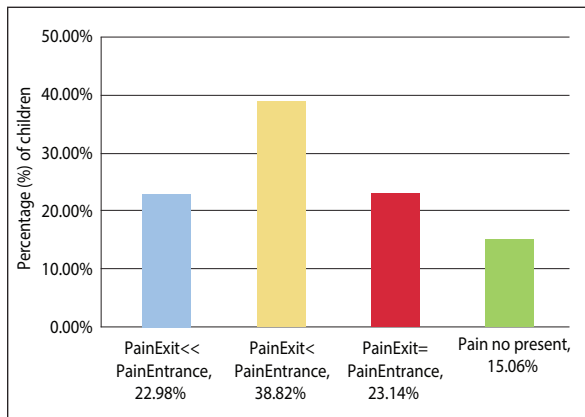


Figure 1
How much pain was reduced in children after ED visit.

the period between access to the ED and the first administration of analgesic was 20 minutes and less than 10% of patients (7.76%) waited for more than 1 hour. These results are not in line with previous experience in Italy nor with a lot of international work on pain management in ED. Our positive data do not confirm previous evidence of delays in providing analgesia: many researchers have reported mean times of administration of about 60 minutes [4, 29-31]. The speed of analgesic administration in our survey was influenced both by the area of Italy in which the ED was located and the type of ED: the time before receiving analgesia was longer for children living in south Italy and those evaluated in a general ED. The geographic difference could be explained by the lack of adequate pain management protocols and training strategies. So, these data could be the results of different or absent protocols concerning of pain management. Provision of analgesics is reported in the literature to take longer in general ED [32] with the mean time to starting analgesia being fairly varied, from 30-60 minutes or more [33, 34]. Many factors can concur to cause a delay, including triage level, afternoon arrival, diagnosis, and inability to obtain intravenous access [35]. Clinical practice needs to be enhanced through education and training.

It is also useful to extend interest in pain assessment to parents. In more than 80% of cases parents wanted to know and be able to use instruments to evaluate the intensity of pain of their children. The role of caregivers in assessing pain in children is central: they can give information regarding the site of the pain (articular, abdominal and head pain are the most frequent types, according to other research) [30]. The parents or caregivers in this study confirmed that the healthcare workers in the ED were concerned about their children's pain: in more than 90% of cases, the level of interest in pain was described as high or sufficient. The symptom was assessed more frequently by a care team (43.77%). In 73.78% of cases the healthcare professionals asked if the child had pain and in 24.71% of cases measured its intensity. Good patient-doctor communication is undoubtedly crucial for providing medical care that satisfies both patients and doctors but also for improving compliance with treatment, health outcomes and recall

of information by the patient [36-41].

Almost all the parents (95%) were very or sufficiently satisfied with the pain care received by their own child in the ED. Nevertheless, the results of the survey did reveal some parental dissatisfaction. Various factors could concur to explain, at least in part, these different perspectives. First of all, symptoms such as pain, thirst, insecurity, anxiety, hunger and nausea could have negatively influenced judgements [42]. Medical competence, physical and technical conditions, and socio-cultural atmosphere are other elements that could affect patients' and their parents' satisfaction [43]. However, patients' satisfaction and perceived quality of care in the ED can also be influenced by the nursing care [44-48]. Our findings confirm this: 63.43% of caregivers reported a high level of satisfaction with management of pain by a healthcare team (nurse and physician). The percentage of caregivers highly satisfied with nurses' interventions was lower (50%), and that for physicians' interventions even lower (44.80%). Nursing skills (interactive, social and supporting capacities, effective communication, accomplishing patients' needs, direct and sustained relations with patients) could explain why assessment of pain by the ED care team is preferred to an individual physician's action [49]. By our data, a greater attention should be reserved to nursing skills and the multidisciplinary pain management, suggesting as also these elements could represent an advancement for the revision of main pain guidelines. The role of physicians as the major protagonist in the assessment of pain was greater in university centres: in 52.96% of cases pain was managed only by doctors, whereas in non-university hospitals a nurse-physician team managed pain in more than half of cases (53.21%). There was also a geographic difference in the pain management provided, with the physician being the predominant figure in ED in the centre and south of Italy, whereas the symptom was largely managed by the ED care team in hospitals in the north of the country. In northern Italy, where pain assessment by ED care teams was more frequent, the satisfaction of caregivers was higher; this suggests that not only do teams manage pain better but also that they are better able to evaluate and respond to the needs of patients, making them and their parents feel accepted and listened to. Indeed, multidisciplinary pain management, communication and cooperation are successful instruments for reducing perceived pain and improving health-related quality of life [50-52].

Greater attention to pain was not only a characteristic of ED team work, but was also correlated with the use of guidelines. Following recommendations in ED on pain management has a dual effect: the level of attention to the symptom is more consistent and the pain is managed more frequently by a team. Many guidelines on pain management are available and, although they have been developed for easy implementation, ED staff have not applied evidence-based recommendations completely, probably because of lack of time and resources, organizational protocols and legislative issues [53, 54]. This discrepancy between recommended practice and actual daily clinical practice was evident from our data. The use of pain scales in the ED was

generally poor, albeit more frequent in the south of Italy. Scales must always be used to assess pain in the paediatric population [55]: they give a correct, objective and quantifiable measurement of the symptom and improve parents' satisfaction and treatment of pain [56-58]. This is another example of how healthcare workers' commitment to better pain management and the use of instruments to achieve this aim could increase parental satisfaction.

In accordance with their parents, children referred a high level of attention to their pain in the ED. Indeed, 95.34% of children were surveyed and almost half of them confirmed having been questioned by the healthcare staff regarding the site of their pain and its intensity. The most innovative aspect of this project was the direct administration of a questionnaire to paediatric patients. If evaluated, the healthcare workers' interest in pain could explain the children's satisfaction [59]. However, questionnaires to children highlighted very poor management of pain in this population: on leaving the ED, 61.4% of children reported only reduction of pain and a quarter of those surveyed had not been given any analgesic. There is, therefore, a large disparity exists between perceived and documented ED pain management practices for children. The undertreatment of paediatric pain was dramatically confirmed by the children themselves and not only by their parents. The limited reduction in pain could be explained by pain not having been assessed in all infants, no treatment of mild and moderate pain in children of all age groups, poor dosages, and by a lack of management strategies for healthcare education [23].

CONCLUSION

This study shows that children and their adult companions referred a high level of satisfaction regarding pain management in ED and great attention to symptom by health care workers was reported. However, inadequate symptom relief was well confirmed. Indeed, half of children with pain did not receive any analgesic drugs. Thus, as mean goal, the quality of pain management in the ED needs to be improved. Education and training programmes are probably the most effective instruments to combat the undertreatment of pain. Finally, more attention could be directed at the specific needs and expectations of patients with non-urgent conditions, who make up the majority of subjects in many ED.

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Availability of data and materials

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Authors' contribution

FB conceived the study and its design and coordinated the PIPER WEEKEND Study Group. FB, SC, and SR drafted the initial manuscript (Introduction, Discussion, Conclusion), participated in data interpretation and approved the final manuscript as submitted.

Conflicts of interest statement

The authors declare that they have no competing interests.

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REFERENCES

1. Kumle B, Wilke P, Koppert W, Kumle K, Gries A. Pain therapy in emergency medicine. Focus on emergency admissions. *Anaesthetist*. 2013;62(11):902-8, 910-3. DOI: 10.1007/s00101-013-2247-x
2. Bauman BH, McManus JG. Pediatric pain management in the emergency department. *Emerg Med Clin North Am*. 2005;23(2):393-414, ix. DOI: 10.1016/j.emc.2004.12.008
3. Grant PS. Analgesia delivery in the ED. *Am J Emerg Med*. 2006;24(7):806-9. DOI: 10.1016/j.ajem.2006.05.004
4. Benini F, Piga S, Zangardi T, Messi G, Tomasello C, Pirozzi N, et al. Nationwide study of headache pain in Italy shows that pain assessment is still inadequate in paediatric emergency care. *Acta Paediatr*. 2016;105(5):e200-8. DOI: 10.1111/apa.13335
5. Maurice SC, O'Donnell JJ, Beattie TF. Emergency analgesia in the paediatric population. Part I: current practice and perspectives. *Emerg Med J*. 2002;19(1):4-7.
6. Evers S, Pothmann R, Uberall M, Naumann E, Gerber WD. Treatment of idiopathic headache in childhood – recommendations of the German Migraine and Headache Society (DMKG). *Schmerz*. 2002;16(1):48-56.
7. Ferrante P, Cuttini M, Zangardi T, Tomasello C, Messi G, Pirozzi N, et al. Pain management policies and practices in pediatric emergency care: a nationwide survey of Italian hospitals. *BMC Pediatr*. 2013;13(1):139. DOI: 10.1186/1471-2431-13-139
8. Ministero della Salute. Il dolore nel bambino. Strumenti pratici di valutazione e terapia. 2010. Available from: www.salute.gov.it/imgs/C_17_pubblicazioni_1256_allegato.pdf.
9. Quality improvement guidelines for the treatment of acute pain and cancer pain. American Pain Society Quality of Care Committee. *JAMA*. 1995;274(23):1874-80.
10. Berde C, Ablin A, Glazer J, Miser A, Shapiro B, Weisman S, et al. American Academy of Pediatrics Report of the Subcommittee on Disease-Related Pain in Childhood Cancer. *Pediatrics*. 1990;86(5 Pt 2):818-25.
11. WHO guidelines on the pharmacological treatment of persisting pain in children with medical illnesses. Available from: http://apps.who.int/iris/bitstream/10665/44540/1/9789241548120_Guidelines.pdf.
12. Harrison D, Joly C, Chretien C, Cochrane S, Ellis J, Lamontagne C, et al. Pain prevalence in a pediatric hospital: raising awareness during Pain Awareness Week. *Pain Res Manag*. 2014;19(1):e24-30.
13. Friedrichsdorf SJ, Postier A, Eull D, Weidner C, Foster L, Gilbert M, et al. Pain outcomes in a US children's hospital: a prospective cross-sectional survey. *Hosp Pediatr*. 2015;5(1):18-26. DOI: 10.1542/hpeds.2014-0084
14. Fortney CA, Steward DK. Medical record documentation and symptom management at the end of life in the NICU. *Adv Neonatal Care*. 2015;15(1):48-55. DOI: 10.1097/ANC.0000000000000132
15. Hechler T, Kanstrup M, Holley AL, Simons LE, Wicksell R, Hirschfeld G, et al. Systematic review on intensive interdisciplinary pain treatment of children with chronic pain. *Pediatrics*. 2015;136(1):115-27. DOI: 10.1542/peds.2014-3319
16. Kozlowski LJ, Kost-Byerly S, Colantuoni E, Thompson CB, Vasquez KJ, Rothman SK, et al. Pain prevalence, intensity, assessment and management in a hospitalized pediatric population. *Pain Manag Nurs*. 2014;15(1):22-35. DOI: 10.1016/j.pmn.2012.04.003
17. Fabbian F, Melandri R, Borsetti G, Micaglio E, Pala M, De Giorgi A, et al. Color-coding triage and allergic reactions in an Italian ED. *Am J Emerg Med*. 2012;30(5):826-9. DOI: 10.1016/j.ajem.2012.02.002
18. Login | Nientemale [Internet]. Available from: www.nientemale.it/cont/login/login.asp
19. Lewén H, Gardulf A, Nilsson J. Documented assessments and treatments of patients seeking emergency care because of pain. *Scand J Caring Sci*. 2010;24(4):764-71. DOI: 10.1111/j.1471-6712.2010.00774.x
20. Maurice SC, O'Donnell JJ, Beattie TF. Emergency analgesia in the paediatric population. Part I Current practice and perspectives. *Emerg Med J*. 2002;19(1):4-7.
21. Brown JC, Klein EJ, Lewis CW, Johnston BD, Cummings P. Emergency department analgesia for fracture pain. *Ann Emerg Med*. 2003;42(2):197-205. DOI: 10.1067/mem.2003.275
22. Dvorkin R, Bair J, Patel H, Glantz S, Yens DP, Rosalia A, et al. Is fever treated more promptly than pain in the pediatric emergency department? *J Emerg Med*. 2014;46(3):327-34. DOI: 10.1016/j.jemermed.2013.08.063
23. Probst BD, Lyons E, Leonard D, Esposito TJ. Factors affecting emergency department assessment and management of pain in children. *Pediatr Emerg Care*. 2005;21(5):298-305.
24. Todd KH, Ducharme J, Choiniere M, Crandall CS, Fosnocht DE, Homel P, et al. Pain in the emergency department: results of the pain and emergency medicine initiative (PEMI) multicenter study. *J Pain*. 2007;8(6):460-6. DOI: 10.1016/j.jpain.2006.12.005
25. Boccio E, Wie B, Pasternak S, Salvador-Kelly A, Ward MF, D'Amore J. The relationship between patient age and pain management of acute long-bone fracture in the ED. *Am J Emerg Med*. 2014;32(12):1516-9. DOI: 10.1016/j.ajem.2014.09.025
26. Ferrante P, Cuttini M, Zangardi T, Tomasello C, Messi G, Pirozzi N, et al. Pain management policies and practices in pediatric emergency care: a nationwide survey of Italian hospitals. *BMC Pediatr*. 2013;13:139. DOI: 10.1186/1471-2431-13-139
27. Bartfield JM, Salluzzo RF, Raccio-Robak N, Funk DL, Verdile VP. Physician and patient factors influencing the treatment of low back pain. *Pain*. 1997;73(2):209-11. [https://doi.org/10.1016/S0304-3959\(97\)00107-3](https://doi.org/10.1016/S0304-3959(97)00107-3)
28. Marquié L, Raufaste E, Lauque D, Mariné C, Ecoiffier M, Sorum P. Pain rating by patients and physicians: evidence of systematic pain miscalibration. *Pain*. 2003;102(3):289-96.
29. Zempsky WT, Loiselle KA, McKay K, Lee BH, Hagstrom JN, Schechter NL. Do children with sickle cell disease receive disparate care for pain in the emergency department? *J Emerg Med*. 2010;39(5):691-5. DOI: 10.1016/j.jemermed.2009.06.003
30. Herd DW, Babl FE, Gilhotra Y, Huckson S. Pain management practices in paediatric emergency departments in Australia and New Zealand: a clinical and organizational audit by National Health and Medical Research Council's National Institute of Clinical Studies and Paediatric Research in Emergency Departments National Collaborative. *Emerg Med Australas*. 2009;21(3):210-21.
31. Arendts G, Fry M. Factors associated with delay to opiate analgesia in emergency departments. *J Pain*. 2006;7(9):682-6. DOI: 10.1016/j.jpain.2006.03.003
32. Cimpello LB, Khine H, Avner JR. Practice patterns of pediatric versus general emergency physicians for pain management of fractures in pediatric patients. *Pediatr Emerg Care*. 2004;20(4):228-32.
33. Jennings N, Gardner G, O'Reilly G, Mitra B. Evaluat-

- ing emergency nurse practitioner service effectiveness on achieving timely analgesia: a pragmatic randomized controlled trial. *Acad Emerg Med*. 2015;22(6):676-84. DOI: 10.1111/acem.12687
34. Patrick PA, Rosenthal BM, Iezzi CA, Brand DA. Time-ly pain management in the emergency department. *J Emerg Med*. 2015;48(3):267-73. DOI: 10.1016/j.jemermed.2014.09.009
 35. Lazio MP, Costello HH, Courtney DM, Martinovich Z, Myers R, Zosel A, et al. A comparison of analgesic management for emergency department patients with sickle cell disease and renal colic. *Clin J Pain*. 2010;26(3):199-205. DOI: 10.1097/AJP.0b013e3181bed10c
 36. Babitsch B, Braun T, Borde T, David M. Doctor's perception of doctor-patient relationships in emergency departments: what roles do gender and ethnicity play? *BMC Health Serv Res*. 2008;8:82. DOI: 10.1186/1472-6963-8-82
 37. Crossley J, Davies H. Doctors' consultations with children and their parents: a model of competencies, outcomes and confounding influences. *Med Educ*. 2005;39(8):807-19. DOI: 10.1111/j.1365-2929.2005.02231.x
 38. Inui TS, Carter WB, Kukull WA, Haigh VH. Outcome-based doctor-patient interaction analysis: I. Comparison of techniques. *Med Care*. 1982;20(6):535-49.
 39. Roter DL, Hall JA. Studies of doctor-patient interaction. *Annu Rev Public Health*. 1989;10:163-80. DOI: 10.1146/annurev.pu.10.050189.001115
 40. Starfield B, Wray C, Hess K, Gross R, Birk PS, D'Lugoff BC. The influence of patient-practitioner agreement on outcome of care. *Am J Public Health*. 1981;71(2):127-31.
 41. Roberts CS, Cox CE, Reintgen DS, Baile WF, Gibertini M. Influence of physician communication on newly diagnosed breast patients' psychologic adjustment and decision-making. *Cancer*. 1994;74(Suppl. 1):336-41.
 42. Müller-Staub M, Meer R, Briner G, Probst MT, Needham I. Measuring patient satisfaction in an emergency unit of a Swiss university hospital: occurrence of anxiety, insecurity, worry, pain, dyspnoea, nausea, thirst and hunger, and their correlation with patient satisfaction (part 2). *Pflege*. 2008;21(3):180-8. DOI: 10.1024/1012-5302.21.3.172
 43. Wilde Larsson B, Larsson G. Patients' views on quality of care: do they merely reflect their sense of coherence? *J Adv Nurs*. 1999;30:33-9.
 44. Lewis KE, Woodside RE. Patient satisfaction with care in the emergency department. *J Adv Nurs*. 1992;17(8):959-64.
 45. Mayer TA, Zimmermann PG. ED customer satisfaction survival skills: one hospital's experience. *J Emerg Nurs*. 1999;25(3):187-91. [https://doi.org/10.1016/S0099-1767\(99\)70203-5](https://doi.org/10.1016/S0099-1767(99)70203-5)
 46. Kihlgren AL, Nilsson M, Skovdahl K, Palmblad B, Wimo A. Older patients awaiting emergency department treatment *Scand J Caring Sci*. 2004;18(2):169-76. DOI: 10.1111/j.1471-6712.2004.00266.x
 47. Huggins KN, Gandy WM, Kohut CD. Emergency department patients' perception of nurse caring behaviours. *Heart & Lung*. 1993;22:356-64.
 48. Baldursdottir G, Jonsdottir H. The importance of nurse caring behaviors as perceived by patients receiving care at an emergency department. *Heart & Lung*. 2002;31:67-75.
 49. Staub MM. Quality of nursing diagnosis and patient satisfaction. A review of the literature. *Pflege*. 2001;14(4):230-8. DOI: 10.1024/1012-5302.15.3.113
 50. Dysvik E, Kvaløy JT, Natvig GK. The effectiveness of an improved multidisciplinary pain management programme: a 6- and 12-month follow-up study. *J Adv Nurs*. 2012;68(5):1061-72. DOI: 10.1111/j.1365-2648.2011.05810.x
 51. Chiaretti A, Pierri F, Valentini P, Russo I, Gargiullo L, Riccardi R. Current practice and recent advances in pediatric pain management. *Eur Rev Med Pharmacol Sci*. 2013;17(Suppl. 1):112-26.
 52. Hechler T, Kanstrup M, Holley AL, Simons LE, Wicksell R, Hirschfeld G, et al. Systematic review on intensive interdisciplinary pain treatment of children with chronic pain. *Pediatrics*. 2015;136(1):115-27. DOI: 10.1542/peds.2014-3319
 53. Bennetts S, Campbell-Brophy E, Huckson S, Doherty S, National Health and Medical Research Council's National Institute for Clinical Studies National Emergency Care Pain Management Initiative. Pain management in Australian emergency departments: current practice, enablers, barriers and future directions. *Emerg Med Australas*. 2012;24(2):136-43. DOI: 10.1111/j.1742-6723.2011.01499.x
 54. Baker K. Chronic pain syndromes in the emergency department: identifying guidelines for management. *Emerg Med Australas*. 2005;17(1):57-64. DOI: 10.1111/j.1742-6723.2005.00690.x
 55. Zempsky WT, Corsi JM, McKay K. Pain scores: are they used in sickle cell pain? *Pediatr Emerg Care*. 2011;27(1):27-8. DOI: 10.1097/PEC.0b013e318203ca03
 56. Corwin DJ, Kessler DO, Auerbach M, Liang A, Kristinsson G. An intervention to improve pain management in the pediatric emergency department. *Pediatr Emerg Care*. 2012;28(6):524-8. DOI: 10.1097/PEC.0b013e3182587d27
 57. Moreaux T. Evendol, a pain assessment scale for pediatric emergency departments. *Soins Pédiatr Puéric*. 2010;(256):32-4.
 58. Topolovec-Vranic J, Canzian S, Innis J, Pollmann-Mudryj MA, McFarlan AW, Baker AJ. Patient satisfaction and documentation of pain assessments and management after implementing the adult nonverbal pain scale. *Am J Crit Care*. 2010;19(4):345-54; quiz 355. DOI: 10.4037/ajcc2010247
 59. Weingarten L, Kircher J, Drendel AL, Newton AS, Ali S. A survey of children's perspectives on pain management in the emergency department. *J Emerg Med*. 2014;47(3):268-76. DOI: 10.1016/j.jemermed.2014.01.038.