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Prevalence of pain in the departments of surgery and oncohematology of a paediatric hospital that has joined the project "Towards pain free hospital"

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Abstract

Background. Among hospitalized adults and children pain is undertreated. This study wants to assess the effectiveness of pain therapy in two departments of a large children's hospital.

Materials and Methods. During a single day work three committees, administering a questionnaire to patients or parents, have evaluated the adherence to international recommendations (JCI and WHO) in the management of analgesic therapy. Patient demographics, prevalence and intensity (moderate and/or severe) of pain (during hospitalization, 24 hours before and at the time of the interview), analgesia (type, route, duration and frequency of administration) and Pain Management Index (=analgesic score-pain score) were recorded.

Results. 75 patients participated in the study (age: 2 months up to 24 years, mean 7.8 ± 6). During hospitalization 43 children (57%) had no pain while 32 (43%) have experienced pain. 22 children (29 %) had pain 24 hours before and 12 (16%) at the time of the interview. The average value of the PMI was -0.8±1.3 with a minimum of -3 and a maximum of +2: 60% (19) of the children had a PMI less than 0 (undertreated pain) while 40% (13) had a value=or>0. Out of 32 patients who needed an analgesic therapy 14 (44%) received an around-the-clock dosing, 8 (25%) an intermittent therapy and 10 (31%) no treatment.17 (77 %) were the single drug therapy and 5 (23%) the multimodal ones.

Conclusion. The prevalence of pain in the two departments is high. The main cause is that knowledge is not still well translated into clinical practice. ***Clin Ter 2016; 167(5):156-160. doi: 10.7417/CT.2016.1948***

Key words: *children, pain, prevalence,therapy*

Introduction

Although there are effective methods for the evaluation and appropriate treatment of pain in the pediatric field, it's still unclear how much current knowledge is daily adopted in clinical practice. For decades, many scientific studies have pointed out that pain is undertreated among hospitalized adults (1-3). Some publications show the same results among the pediatric population (3-8). Some doctors have already used existing collection of data to improve the treatment of pain in their hospital setting (8-9). In Italy the law n. 38 of March 15, 2010 ("Measures to ensure access to the network of care and pain therapy") was promulgated. It should be an improvement in the treatment of pain due to the realization of information, organizational and training projects in hospital and territory. Bambino Gesù Pediatric Hospital, a hospital with 607 beds, since 2003 has joined the project "Towards Pain Free Hospital" and since 2006 has been accreditated by Joint Commission International (JCI).

The purpose of this work is to analyze the prevalence of pain, pain intensity and pain therapy in two sample departments (the Department of Surgery and the Department of Oncology) inside a hospital that has joined some years ago the project "Towards a Hospital without pain". The goal is to identify areas of good clinical practice in the treatment of pain and areas that can benefit from improvements through focused programming of future training courses, audits and scientific researches. The study was approved by the local ethic committee.

Materials and methods

In our hòspital pain assessment has become an integral part of the medical record and pain is assessed and registered as a vital sign in the medical record with intervals and methods described in a special protocol (Table 1).

The hospital also uses a protocol for the approach to pain management and a protocol for postoperative pain. In daily clinical practice pain is mainly managed by doctors and nurses of single wards. We conducted a cross sectional study selecting a specific interval (from 8:30 to 17:30) within a single working day of the week, to have a snapshot of the pain experience in a typical working day of the involved departments. The survey was carried out by two pairs of investigators made up of a doctor (possibly Anesthesiologist) and a nurse, not involved in the care of the patient, assigned to hand out a questionnaire-data collection to hospitalized patients or to their parents. Prior informed consent was

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Table 1. Pain Assessment.

	NIPS	PIPP	CRIES	COMFORT B	FLACC	VAS/NRS
Neonate	Premature Or At term	Premature or at term, sedated, intubated and ventilated	GA≥32weeks or at term, underwent surgery, spontaneous breathing			
	X	X	X			
30gg<4aa					X	
>4aa						X
Sedated children				X		
Neurologically impaired children				X If parents are absent	X To the parents if present	X To the parents if present
Minimum requirement of pain asessment						
Intensive Care	At least four times in a day (every six hours)					
Ward	At least two times in a day (every twelve hours)					
Day Hospital	At least one time in a day (at the entrance)					
Day Surgery	At least three times in a day (at the entrance to the ward, after therapy and before the discharge)					
Postop patients	At least three times in a day (at the entrance to the ward, and every eight hours) for the first 24 hours postop.					
Neonates	At least four times in a day (every six hours)					
Oncoemato patients	At least four times in a day (every six hours)					

obtained by the doctor from parents or from patients more than six years old with the permission of their parents. They signed a pre-printed paper form specifically formulated for individual ages. Even patients with language barriers were enrolled in the study because some authors sustain that they receive a sub optimal pain therapy (10, 11). For patients and families with inability to understand Italian an interpreter was used. Only the patients present in the two departments at the time of visit have been included in the study. The two committees evaluated the adherence to international recommendations (JCI, WHO) in the management of pain treatment, pointing out the prevalence of pain, its intensity and pain therapy prescribed. When necessary, medical records have been consulted in order to verify the "pain history" in the hospital for individual patient and the appropriateness of analgesic administration respecting the intensity of pain experienced. Recorded data were: 1) patient demographics (age sex, weight, presence of language barriers or cognitive deficits); 2) prevalence and intensity of moderate and/or severe pain during hospitalization, 24 hours before the interview, and at the time of the interview; 3) the type of analgesic administered, the way, the duration and frequency of administration of drugs; 4) the Pain Management Index (PMI) as suggested by Strohbuecker et al (12) and modified for use in children. PMI compares the analgesic drug with the level of pain reported by the patient and were computed by subtracting pain scores from analgesic scores. The analgesics were scored as follows: no analgesic: 0 points, WHO I: 1 point, WHO II: 2 points, WHO III: 3 points. We defined and scored pain levels of NRS and FLACC 0: no pain (0 points) NRS and FLACC 1-3: mild pain (1 point), NRS and FLACC 4-6: moderate pain (2 points) and NRS and FLACC 7-10: severe pain (3 points). The PMI ranges from -3 (patients with severe pain receiving no drug at all) to +3 (patients receiving strong opioids and reporting complete pain relief), negative scores indicate undertreatment. The index was originally used to assess the adequacy of pain treatment of adult patients with cancer. Since then it has been used in many other studies (8, 13-26).

For statistical analysis we performed a descriptive analysis using the minimum values, maximum values, averages and standard deviations.

Results

At 8.30 the day fixed for the survey 93 patients were identified to interview. 75 patients (80.5%; 44 male and 31 female, aged, average 7.8 ± 6, min 2 months, max 24 years old) participated to the study. Out of them 39 (52%) admitted to the Department of Oncology and 36 (48%) in the Department of Surgery (Tab 2).

Table 2. Demographics.

Department	Oncohematology 39 Surgery 36
Age	7,8 ± 6 (min 2 months, max 24 years)
Gender	Male 44 Female 31
Total	75

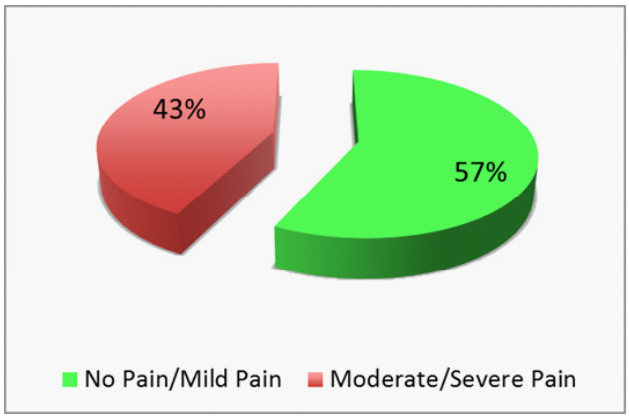

Fig. 1. Pain prevalence.

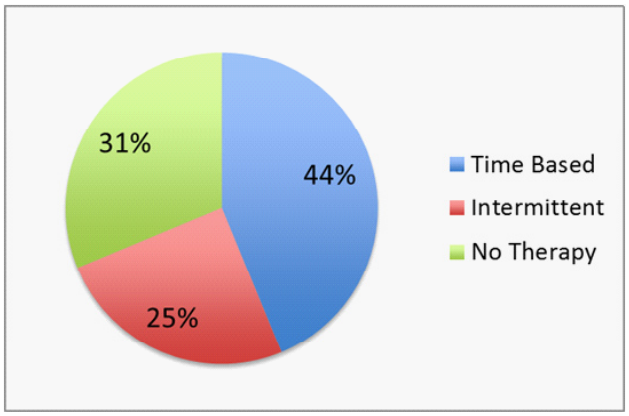

Fig. 3. Pain Therapy.

18 patients (19.5%) were excluded for: lack of consent (7), absence of parents (5), absence from the department (3), discharge (3). Questionnaire answered 64 parents (85%) and 11 children (15%). During hospitalization (Fig.1) 43 children (52%) didn't feel pain or felt mild pain, while 32 (43%) had moderate (22 pts) and/or severe pain (18 pts). In particular, 22 (29%) had moderate or severe pain in the 24 hours before the interview and 12 (16%) at the time of the interview.

To assess the appropriateness of analgesic therapy PMI was calculated (Fig. 2) for all patients with moderate and/or severe pain during hospitalization. The average value was -0.8 ±1.3 with a minimum of -3 and a maximum of +2: 60% (19 pts) of children with analgesic therapy had a PMI of less than 0 (undertreated pain) while 40% (13 pts) had a value =or>0. Out of 32 patients who needed an analgesic therapy (Fig.3) in 14 patients (44%) a pain time-therapy was administered, in 8 patients (25%) intermittent therapy (as needed), and in 10 (31%) no pain relief (Fig. 3). 17 (77%) administered therapies were single-drugs and only 5 therapies (23%) were polymodal.

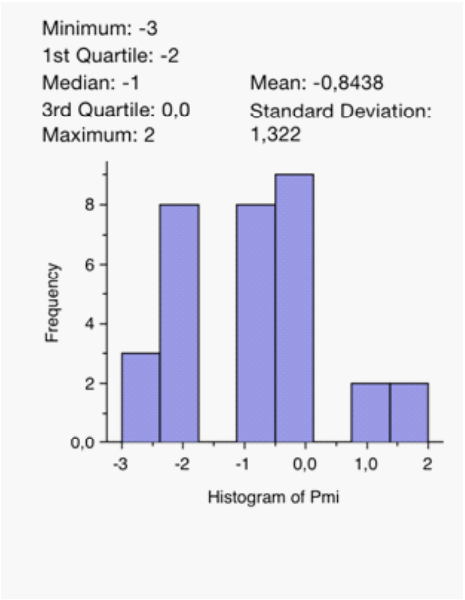

Fig. 2. PMI.

Using a scale from 1 to 10 points, patients and/or parents rated the efficacy of therapies with a mean value of 6.4±3 with a minimum of 0 and a maximum of 10. 20 (62%) patients and/or parents were informed about pain and pain therapy while 12 (38%) did not receive any information. The information was considered good in 65% of cases (13), sufficient in 20% (4), poor in 10% (3) and very good in only one case (5%).

Discussion

Despite the commitment to the project "Towards Pain Free Hospital", JCI standards and the recent introduction in Italy of Law No. 38 of March 15, 2010 the prevalence of pain in the two departments seems high. Few are papers about prevalence of pain in pediatric hospitals . Fewer still are papers about prevalence of pain in pediatric hospitals that have joined the project "Towards Pain Free Hospital".

Our findings indicate that like other hospitals the presence of a certain amount of pain in the two departments is clear. In fact it seems to be high the presence of moderate to severe pain in 43% of hospitalized children. But when compared with other hospital our results are better for pain at 24 hours before the interview (29% of children) and at the time of the interview (16%) (Tab. 2 and Tab. 3), mostly if compared with Italian adult hospital (Tab. 4) that joined or not the project "Towards Pain Free Hospital" before the entry into force of law No. 38 of March 15, 2010 (27-32).

The results we had about pain 24 hours before and at time of interview, are better than other children's hospitals probably because the adhesion to the project "Towards a Pain Free Hospital" involved the systematic introduction and recording of the evaluation of pain in the medical record of all the patients admitted in our hospital. This has led to increased surveillance and treatment of pain. Instead of against other italian hospitals that have joined the project hospital without pain, our best results are probably related to the fact that we have had more time for clinical application of the principles of the project we joined, so that doctors and nurses developed a greater culture of pain.

On the other hand unfortunately we can say that pain therapy is unsatisfactory because 60% of children with moderate or severe pain had a PMI below 0, that is to say

Table 3. Pain prevalence among pediatric hospitals.

Author	Patients	M/S	24 hrs	Interwiew	year
EA Cummings[7]	n = 200	49	-	-	1996
JA Ellis[37]	n = 237	20-21	-	-	2002
EM Taylor[8]	n = 241	49,3	66	23	2008
LM Zhu[9]	n = 265	31,5	44	n.a	2012
CB Groenewald[38]	n = 321	27	-	-	2012
D Harrison[39]	n = 62	64	-	16	2014
SJ Friedrichsdorf[40]	n = 279	50	.	-	2015

Data presented as % unless otherwise indicated. n pts=number of patients; M/S= Moderate/Severe Pain; 24 hrs=Pain 24 hours before the interview; Interview=Pain at interview

Table 4. Pain Prevalence among Italian hospital that joined the project "Towards Pain Free Hospital".

Author	n pts	M/S	24 hrs	Interwiew	year
Visentin[27]	n = 718	44,3	-	-	1999
Ripamonti[27]	n = 258	57,2	51,5	-	2000
Costantini[27]	n= 4121	41,3– 82,4	56,6	43,1	2002
Visentin[27]	n= 3931	69.5	-	-	2005
Melotti[27]	n = 892	-	52	37.7	2005
Quattrin[27]	n = 145	-	69-42.4	43-35.3	2007

Data presented as % unless otherwise indicated. n pts=number of patients; M/S= Moderate/Severe Pain; 24 hrs=Pain 24 hours before the interview; Interview=Pain at interview

undertreated pain. This is probably the result of a prescription of pain treatment that does not follow JCI and WHO guidelines. Indeed, it's notable that 31% of children with moderate or severe pain didn't receive any pain relief and 25% had an intermittent pain therapy (not-timed). In addition only 23% of the administered time therapies were multimodal therapies.

Conclusion

Unfortunately our findings refer only to a small scale level of patients admitted in our hospital and in particular, they refer to two departements in which pain is a very sensitive issue. So to get a more accurate picture of our reality we should extend the analysis to the whole hospital.

To improve our pain therapy we have to follow first of all a recent and profound reflection of some authors about the concept that pain assessment is the main foundation for the treatment of pain (33, 34). In fact, despite improvements in the documentation for the assessment of pain, there has been little practical results obtained in the pain treatment of children and adults (33-38). The unidimensional scales don't transmit all the necessary information to facilitate decisions of health workers. This is especially true in the pediatric field where the whole appearance of cognitive, developmental psychosomatic, affective characteristics, disease process and clinical context pose additional difficulties. So someone sees the process of assessment of pain as a clinical art and a social communication (38-41). Secondly to improve pain therapy we have to recognise there is a knowing-doing gap probably linked to many factors that are also highlighted in the recent literature. In fact, despite the holding of training courses and audits, the organizational model we have chosen for pain therapy and the employment of professionals of pain only for the treatment of very complex cases leads to undertreatment of pain. In fact, among the doctors in various departments, as a result of the considerable amount of work, often there is little interest in the treatment of pain and a fear of using strong analgesics. This greatly limits the prescription of an effective analgesic therapy (41-45) and the application of techniques that they know little or nothing about.

References

1. Donovan M, Dillon P, McGuire L. Incidence and characteristics of pain in a sample of medical- surgical inpatients. Pain 1987; 30:69-78
2. Owen H, McMillan V, Rogowski D. Postoperative pain therapy: A survey of patients' exepectations and their experiences. Pain 1990; 41:303-7
3. Abbott FV, Gray-Donald K, Sewitch MJ, et al. The prevalence of pain in hospitalized patients and resolution over six months. Pain 1992; 50:15-28
4. Mather L, Mackie J. The incidence of postoperative pain in children. Pain 1983; 15:271-82
5. Johnston CC, Abbott FV, Gray-Donald K, Jeans ME. A survey of pain in hospitalized patients aged 4-14years. Clin J Pain 1992; 8:154-63
6. McNeill LA, Sherwood GD, Starck PL. The hidden error of mismanaged pain: A systems approach. J Pain Symptom Manage 2004; 28:47-58
7. Cummings EA, Reid GJ, Finley GA, et al. Prevalence and source of pain in pediatric inpatients. Pain 1996; 68:25-31
8. Elsa M Taylor, Kristina Boyer, Fiona A Campbell. Pain in hospitalized children: A prospective cross-sectional survey of pain prevalence, intensity, assessment and management in a Canadian pediatric teaching hospital. Pain Research & Management: The Journal of Canadian Pain Society; Jan/Feb 2008; 13:25-32
9. Zhu LM, Stinton J, Palozzi L. et al. Improvements in pain outcomes in a Canadian pediatric teaching hospital following implementation of a multifaceted, knowledge translation initiative. Pain Res Manage 2012; 17(3):173-9
10. Mc Neill JA, Sherwood GD, Stark PL. The hidden error of mismanaged pain: A systems approach. J Pain Symptom Manage 2004; 28:47-58
11. Green CR, Anderson KO, Baker TA et Al. The unequal burden of pain: confronting racial and ethnic disparities in pain. Pain

Med 2003; 4:277-94
12. Strohbuecker B, Maye H, Evers G CM, Sabatowski R. Pain prevalence in hospitalized patients in a German university teaching hospital. J Pain and Symptom management 2005; 29:498-506
13. Mercadante S, Guccione C, Di Fatta S, et al. Cancer pain management in an oncological ward in a comprehensive cancer center with an established palliative care unit. Support Care Cancer 2013; 21(12):3287-92
14. Te Boveldt N, Vernooij-Dassen M, Burger N, et al. Pain and its interference with daily activities in medical oncology outpatients. Pain Physician 2013; 16(4):379-89
15. Kwon JH, Oh SY, Chisholm G, et al. Predictors of high score patient-reported barriers to controlling cancer pain: a preliminary report. Support Care Cancer 2013; 21(4):1175-83
16. Tateno Y, Ishikawa S. Clinical pathways can improve the quality of pain management in home palliative care in remote locations: retrospective study on kozu Island, Japan. Rural Remote Health 2012; 12:1992
17. Langford DJ, Tripathy D, Paul SM, et al. Trajectories of pain and analgesics in oncology outpatients with metastatic bone pain. J Pain 2011; Apr 12(4):495-507
18. Mitera G, Fairchild A, DeAngelis C, et al. A multicenter assessment of cancer pain treatment using the pain management index. J Palliat Med 2010 May; 13(5):589-93
19. Green CR, Hart-Johnson T. The adeguacy of cronic pain management prior to presenting at a tertiary care pain center: The role of patient socio-demographic characteristics. J Pain 2010; 11(8):746-54
20. Sichetti D, Bandieri E, Romero M, et al. Impact of care on pain management in patients with cancer: a multicentre cross-sectional study. Ann Oncol 2010; 21(10): 2088-93
21. Mitera G, Zeiadin N, Kirou-Mauro A, et al. Retrospective assessment of cancer pain management in an outpatient radiotherapy palliative clinic using the Pain Management Index J Pain Symptom Manage. 2010; 39(2):259-67
22. Gatti A, Sabato AF, Carucci A, et al. Adequacy assessment of oxycodone/paracetamol (acetaminophen) in multimodal chronic pain: a prospective observational study. Clin Drug Investig 2009;29 Suppl 1:31-40
23. Apolone G, Corli O, Caraceni A, et al. Pattern and quality of care of cancer pain management. Results from the Cancer Pain Outcome Research Study Group. Br J Cancer. 2009 May 19; 100(10):1566-74
24. Deandrea S, Montanari M, Moja L, Apolone G. Prevalence of undertreatment in cancer pain. A review of published literature Ann Oncol 2008; 19(12):1985-91
25. Van den Beuken-van Everdingen MH, de Rijke JM, Kessels AG, et al. High prevalence of pain in patients with cancer in a large population-based study in The Netherlands. Pain. 2007 Dec 5;132(3):312-20. Epub 2007 Oct 3
26. Enting RH, Oldenmenger WH, Van Gool AR, et al. The effects of analgesic prescription and patient adherence on pain in a dutch outpatient cancer population. J Pain Symptom Manage. 2007; 34(5):523-31
27. Ripamonti C, Valle A, Peruselli C, et al. Project "Hospital without pain": analysis of the Italian situation before the law 38. Assist Inferm Ric 2011; 30(2):95-9
28. Rozzi A, Scirocchi R, Fava A, et al. Pain assessment in terminally-ill cancer patients on admission in hospice and its modification after the first three days of care. A monocentric experience. Clin Ter 2011; 162(5):413-7
29. Lucenteforte E, Collini F, Simonetti M, et al. Assessing pain in hospital in-patients: a cross-sectional study in Tuscany, Italy. Intern Emerg Med 2012 Oct;7(5):477-82
30. Sodo S, Cartoni C, Cerbo R, et al. Prevalence of pain in the hospital: results from a survey among inpatients in a teaching hospital. Ig Sanita Pubbl 2012; 68(3):421-34
31. Cerbo R, Casertano L, La Torre G. Hospital without pain: hospital experiences in the Lazio Region of Italy. Ann Ig 2010; 22(6):513-20
32. Melotti RM, Samolsky-Dekel BG, Ricchi E, et al. Pain prevalence and predictors among inpatients in a major Italian teaching hospital. A baseline survey towards a pain free hospital. Eur J Pain 2005; 9(5):485-95
33. Stefan Lundeberg. Pain in children – are we accomplishing the optimal pain treatment? Pediatric Anesthesia 2015; 25: 83–92
34. T.Voepel-Lewiss. Pain assessment and decision making: Have we missed the mark? Pediatric Pain Letter 2011;13(1): 1-6
35. Broughton K, Blower C, Chartrand C, et al. Impact of research on pediatric pain assessment and outcomes. Pediatric Nurs 1998; 24:31-35,62
36. Franck LS, Allen A, Oulton K. Making pain assessment more accessible to children and parents: can greater improvement the quality of care? Clin J Pain 2007; 23:331-8
37. Franck LS, Bruce E. Putting pain assessment into practice: why is it so painful? Pain Res Manag 2009; 14:13-20
38. Von Baeyer CL. Children's self-reports of pain intensity: scale selection, limitation and interpretation. Pain Res Manag 2006;11:157-62
39. Von Baeyer CL. Children's self-reports of pain intensity: what we know, avere we are headed. Pain Res Manag 2009; 14:39-45
40. Schiavenato M, Craig KD. Pain assessment ad a social transation: beyond the "gold standard". Clin J Pain 2010; 26:667-76
41. Berde C, McGrath P. Pain measurement and Beecher's challenge: 50 years later. Anesthesiology 2009;111:473-4
42. Ellis JA, O'Connor BV, Cappelli M et al. Pain in hospitalized pediatric patients: how are we doing? Clin J Pain 2002; 18: 262–9
43. Groenewald CB, Rabbitts JA, Schroeder DR,et al. Prevalence of moderate–severe pain in hospitalized children . Pediatric Anesthesia (2012) 661–668
44. Harrison D, Joly C, Cretien C, Cochrane S, Ellis J, Lamontagne C, Vaillancourt R. Pain prevalence in a pediatric hospital: Raising awareness during Pain Awareness Week. Pain Res Manag 2014; 1: e24-e30.
45. Friedrichsdorf SJ, Postier A, Eull D, Weidner C, Foster L, Gilbert M, Campbell F. Pain outcomes in a US Children's Hospital: a Prospective Cross-Sectional Survey. Hosp Pediatr 2015 Jan 5(1):18-26