ORIGINAL ARTICLE

Pain prevalence and characteristics in patients admitted to a Portuguese hospital*

Prevalência e características de dor em pacientes internados em hospital português

Eunice José da Graça Dias Gomes da Silva[1], Maria dos Anjos Coelho Rodrigues Dixe[2]

*Received from the Hospital Center Leiria Pombal, Leiria, Portugal.

ABSTRACT

BACKGROUND AND OBJECTIVES: Studies on pain prevalence systematically point to high values. Although not comparable, a global analysis allows inferring that from every two hospitalized patients, one is in pain. This study aimed at determining pain prevalence, its characteristics, analgesic treatment and satisfaction of patients admitted to a hospital in the Center of Portugal with regard to pain evaluation and treatment.
METHODS: This is a transversal and observational study with 141 patients admitted for at least 24 hours to surgical and medical units (excluded those unable to communicate), with mean age of 69 years, of both genders, who were interviewed after compliance with respective formal and ethic procedures.
RESULTS: Pain prevalence in the 24 hours previous to the study was 52.5% (28.8% severe pain). During interviews, prevalence has decreased to 41.1% (2.7% severe pain). Patients with more severe pain were admitted to surgical services and pain was primarily musculoskeletal. Most patients with pain have waited no more than ten minutes before analgesics were administered. From 57 patients referring pain during data collection, 46 (80.7%) did not require a different drug and 91.3% were happy with their treatment.
CONCLUSION: In this institution, there has been pain prevalence and approach similar to the literature, but pain remains undertreated. Such data shall allow the definition and implementation of a more focused and effective pain control program.
Keywords: Pain, Pain intensity, Pain prevalence, Pain treatment, Patient's satisfaction.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Os estudos de prevalência da dor apontam, sistematicamente, para valores elevados. Embora não comparáveis, a análise global permite inferir que em cada dois pacientes internados, um tem dor. Este estudo teve como principais objetivos determinar a prevalência da dor, suas características, tratamento analgésico e satisfação de usuários internados num hospital da Zona Centro de Portugal face à avaliação e tratamento da dor.
MÉTODOS: Estudo transversal e observacional realizado com 141 pacientes, internados há pelo menos 24 horas, em unidades cirúrgicas e médicas (excluídos os não comunicantes), com idade média de 69 anos, de ambos os gêneros, a quem foi realizada uma entrevista após o cumprimento dos respetivos procedimentos formais e éticos.
RESULTADOS: Obteve-se prevalência de dor nas 24 horas anteriores ao estudo de 52,5% (28,8% dor intensa). Na altura da entrevista, a prevalência diminuiu para 41,1% (2,7% de dor intensa). Os pacientes com mais dor estavam internados nos serviços cirúrgicos e o tipo de dor era sobretudo musculoesquelética. A maioria dos pacientes com dor esperou, no máximo, 10 minutos, para lhe ser administrado um analgésico. Dos 57 que referiram dor no momento da coleta dos dados, 46 (80,7%) não desejaram outro fármaco e 91,3% mostraram-se satisfeitos com o seu tratamento.
CONCLUSÃO: Nessa instituição houve prevalência e abordagem da dor semelhantes às da literatura, mas a dor ainda se encontra subtratada. Esses dados permitirão a definição e implementação de um programa de controle de dor mais dirigida e eficaz.
Descritores: Dor, Intensidade da dor, Prevalência de dor, Satisfação do paciente, Tratamento da dor.

INTRODUCTION

Pain is a universal and transversal problem to many diseases. It is subjective, very often difficult to describe, but patients should feel that health professionals are willing to listen to them. If untreated, pain leads to several adverse effects, such as cardiovascular, immunological, thrombotic, psychological, social, sleep disorders or even pain chronicity.
Fortunately, the right for its treatment is being broadly spread and accepted, being considered a quality criterion. Patients have the right to pain evaluation and treatment, and to be in-

1. Centro Hospitalar Leiria Pombal, Portugal.
2. School of Health Sciences of Leiria, Polytechnical Institute of Leiria, Health Research Unit, Leiria, Portugal.

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Correspondence to:
Maria dos Anjos Coelho Rodrigues Dixe
Rua das Hortas nº 81 – Barosa
2400-013 Leiria, Portugal
E-mail: manjos.dixe@gmail.com

volved with the treatment even after hospital discharge[1]. But in spite of this worldwide concern, pain is still undertreated, especially due to barriers imposed by health professionals, patients, relatives, institutions and society[2-5].

A study carried out in Portugal from January 2007 to March 2008, by telephone, has shown 36.7% prevalence of chronic pain among the Portuguese population. From these, 35% have referred severe pain[6].

Studies on the prevalence of pain are quality indicators, since they give information both to health professionals and health area managers[7]. So, they are one of the first assistance improvement measures to decrease pain. Results prompt to this subject and lead institutions to adopt strategies aiming at decreasing pain[8].

Reviewing the literature, it is possible to observe that there are several studies on intra-hospital pain prevalence. Table 1 summarizes some results obtained from different hospitals worldwide to establish an overview. Although much has been done to improve pain management, referred studies point to a prevalence of pain during the interviews of 43 to 84%, and severe pain within 24 hours may reach 42%[7-14].

True comparisons are difficult due to variations on samples, methods and structure of the studies, but it is possible to make a global analysis and to notice that, no matter how much is published about pain, prevalence is kept high along the years. Some studies have shown pain management improvements as a consequence of world campaigns that organizations such as IASP (International Association for the Study of Pain), WHO (World Health Organization) and JCAHO (Joint Commission on Accreditation of Healthcare Organizations) have carried out in favor of pain management and approach[1]. Studies repeating the pain prevalence study of 2008 have obtained worse results in 2010, referring that annual evaluation of prevalence has provided major evidence for the institution and its publication, which is an incentive for other institutions[7,13]. In fact, studies such as the above allow the identification of situations to be improved, leading to the adoption of specific approaches directed to such situations in all evaluated hospitals (Table 1).

This context has suggested our study with the following objectives: determining pain prevalence in the last 24 hours and its characteristics the moment the questionnaire was applied (24h allow pain management and possible decrease of its prevalence) to patients hospitalized for more than 24 hours. We have also evaluated applied therapeutic techniques and their efficacy, in addition to measuring patients' satisfaction with pain evaluation and control.

METHODS

This is a transversal and observational study carried out in the Hospital Center Leiria-Pombal (CHLP). Its area of influence encompasses approximately 350 thousand inhabitants. Hospitalization is distributed by medical services (Internal Medicine, Cardiology, Gastroenterology, Pediatrics, Pulmonology, Psychiatry, Dermatology), surgical services (General Surgery, Gynecology/Obstetrics, Ophthalmology, Orthopedics, ENT and Urology) and Intensive Care. The institution receives cancer and non-cancer patients, with capacity of 543 beds. It has been accredited by JCAHO in July 2012.

Participated in the study patients hospitalized for more than 24 hours who wished to participate, who were conscious to give their consent and who spoke Portuguese. Hospitalization for more than 24 hours gives the opportunity to establish pain management plans. Other inclusion criteria were conscious and oriented patients. These criteria were checked with the brief mini mental state exam.

Exclusion criteria were patients admitted to Psychiatry, Ob-

Table 1. Studies on the prevalence of intra-hospital pain

Studies	Sites	Sample	Pain prevalence within 24h	Prevalence of severe pain within 24h	Pain prevalence at interview	Prevalence of severe pain at interview	Happy to very happy
Salomon et al.[8]	French Teaching Hospital	998	55%	25%	-	-	76%
Costantini, Viterbori & Flego[10]	30 hospitals of Liguria (Italy)	4121	56.6%	29.6%	43.1%	11.7%	-
Strohbuecker et al.[11]	German Teaching Hospital	561	63%	36%	50%	-	-
Bolíbar, Català & Cadeno[12]	Spanish Teaching Hospital	309	54.7%	13%	-	-	-
Sawyer et al.[13]	Canadian Teaching Hospital	114	76.3%	14%	71%	11.4%	-
Sawyer et al.[7]	Canadian Teaching Hospital	98	-	25.8%	84%	-	4.72/6 n = 91
Wadensten et al.[14]	Swedish Teaching Hospital	759	65%	42.1%	-	5.8%	79%
Yates et al.[9]	2 Australian Public Hospitals	114*	48%	24.6%	-	-	-

*only cancer patients.

stetrics and Pediatrics Services and to Intensive Care Units.
At data collection time, 258 patients were hospitalized in the services included in the study. After checking inclusion criteria, sample was made up of 141 patients, that is, 54.7% of total population.
A structured interview made up of four groups was used: sociodemographic and clinical characteristics: age, gender, marital status, education, hospitalization reason and duration; Brief Pain Inventory, Short Form; McGill Pain Questionnaire Short Form (MPQ); patients' satisfaction with regard to pain evaluation and control, which is a group integrating questions related to satisfaction, pain evaluation and control.
Data were collected after Board of Directors' authorization. Service directors, as well as chief nurses were contacted to define the best data collection strategy. After this procedure, data collection days were defined and data were collected by nursing students (after information and qualification for the activity) and by the authors of the study during March and April 2012. Data collection by people not belonging to the service aimed at not influencing patients' answers during this stage of the research.
All participants gave their consent after being explained about the objectives of the study and what would their participation be, assuring anonymity and confidentiality of answers. An adequate place for data collection was always assured, and all Helsinki declaration indications were met.

Statistical analysis
Data were treated by *Microsoft Excel* and *Statistical Package for the Social Sciences (SPSS)* – version 15.0 for *Windows*. To systematize and highlight data information, descriptive statistical techniques were used: frequency (absolute and relative), central trend measures (median and arithmetic mean), dispersion and variability measures (standard deviation – SD). Whenever applicable, non parametric Chi-square, Mann-Whitney and Kruskal-Wallis statistical tests were applied (variables had abnormal distribution according to Kolmogorov Smirnov test).
This study was approved by the institution's Ethics Committee under protocol 1/12 from 03/13/2012.

RESULTS

Patients answering the questionnaire (n=141) are in their majority males (54.6%), married (62.3%) and graduated from the 1st cycle with literary skills (66.1%) with mean age of 69.3 ± 14.2 years (Table 2).
Patients were admitted to internal medicine (41.8%), surgical clinic (40.4%) and orthopedics (17.8%) for 7.4 ± 11.9 days, being surgery the most frequent reason. Other reported causes were infected knee arthritis (1); stroke (1); total right knee replacement dehiscence (1); head and neck pain (1); plane accident; fracture (2), total hip replacement luxation (1) and unknown causes (16).
Pain prevalence in the last 24 hours was 52.5% (74).
Aiming at verifying whether prevalence rate would vary with gender, Chi-square test was applied and has shown no significant differences ($p > 0.05$), being the highest percentage in painful patients, both males (51.9%) and females (53.1%).
Patients reporting no pain in the last 24 hours were, in general, older (M=70.9; SD=13.9) than those reporting pain (M=67.8 years; SD= 14.4); however these differences have no statistical significance (U= 2163,000; $p>0.05$).
Pain is related to the reason for hospitalization (Chi-square

Table 2. Distribution of answers with regard to sociodemographic and hospitalization characteristics

	Variables	n	%		Min/Max	Mean ± SD
Age					23 /97	69.3 (14.2)
Gender (n = 141)	Male	77	54.6			
	Female	64	45.4			
Marital status (n = 138)	Married	86	62.4			
	Single	6	4.3			
	Widower	42	30.4			
	Divorced	4	2.9			
Academic skills (n = 115)	1st cycle	76	66.1			
	2nd cycle	19	16.5			
	3rd cycle	9	7.8			
	High school	6	5.2			
	College	5	4.3			
Hospitalization service	Surgery	59	41.8			
	Internal Medicine	57	40.4			
	Orthopedics	25	17.8			
Hospitalization time					1/120	7.4 (11.9)
Reason for hospitalization	Surgery		57	41.6		
	Non surgical disease		56	40.9		
	Other		24	17.5		

Table 3. Distribution of answers with regard to pain location

Pain location	n	%
Thigh	5	7.0
Hip	3	4.2
Right knee	4	5.6
Right arm	5	6.9
Left knee, head (frontal), neck, thighs and heels	8	11.1
Lumbar region	1	1.4
Abdomen and coccyx	5	6.9
Head and shoulders	5	6.9
Abdomen	24	33.3
Righ foot	4	5.6
Legs	2	2.8
Dorsal region	1	1.4
Bladder	3	4.2
Ears	1	1.4
Chest	1	1.4

= 16.042; $p<0.05$) being more prevalent in surgical diseases (71.9%). Non surgical disease rate was 35.7% and other causes was 41.1%.

From 74 patients referring pain, 72 were able to locate it. In 33.3% of patients it was exclusively located in the abdomen, but most prevalent was musculoskeletal pain, with 54% of patients referring it (Table 3).

According to World Health Organization criteria and based on data shown in table 4 one may highlight that 52.1% of respondents have felt pain above 4 in the last 24 hours, and 20.5% had pain equal to or above 4 at data collection time. It is worth stressing that some patients were unable to quantify pain, especially minimum pain in the last 24 hours.

From *Short-form McGill Pain Questionnaire* results one may conclude that, within pain sensory dimension, "tender to touch" is the most relevant characteristic since 14.3% have classified it as severe.

In the affective dimension, most referred pain characteristic was "tiring – exhausting", being referred by 14.5% of respondents as moderate (Table 5).

Table 4. Distribution of answers with regard to pain intensity

	Maximum pain in the last 24h		Minimum pain in the last 24h		Mean pain in the last 24h		Pain right now	
	n	%	n	%	n	%	n	%
No pain							15	20.5
1-3 mild pain	19	26.8	32	64.0	41	56.2	43	58.9
4-7 moderate pain	37	52.1	18	36.0	31	42.5	13	17.8
8-10 severe pain	15	21.1			1	1.4	2	2.7

Table 5. Distribution of answers according to pain characteristics

	Pain characteristics	Absent		Mild		Moderate		Severe	
		n	%	n	%	n	%	n	%
Sensory pain dimension	Throbbing (n=64)	52	81.3	5	7.8	6	9.4	1	1.6
	Shooting (n=61)	49	80.3	4	6.6	8	13.1	0	0.0
	Stabbing (n=61)	41	67.2	4	6.6	14	23.0	2	3.3
	Sharp (n=62)	44	71.0	7	11.3	9	14.5	2	3.2
	Cramping (n=63)	57	90.5	5	7.9	1	1.6	0	0.3
	Gnawing (n=64)	26	40.6	7	10.9	24	37.5	7	10.9
	Hot burning (n=63)	47	74.6	8	12.7	6	9.5	2	3.2
	Aching (n=63)	40	63.5	10	15.9	7	11.1	6	9.5
	Heavy (n=63)	44	69.8	6	9.5	8	12.7	5	7.9
	Tender (n=63)	42	66.7	2	3.2	10	15.9	9	14.3
	Splitting (n=63)	53	88.3	4	6.7	1	1.7	2	3.3
Affective pain	Tiring exhausting (n=62)	45	72.6	7	11.3	9	14.5	1	1.6
	Sickening (n=64)	55	85.9	5	7.8	3	4.7	1	1.6
	Fearful (n=61)	56	91.8	4	6.6	0	0.0	1	1.6
	Cruel punishing (n= 61)	55	90.2	4	6.6	1	1.6	1	1.6

The NWC index (Number of Words Chosen), that is, total number of words chosen by subjects, has reached a mean value of 3.3 with standard deviation of 3.5. Sensory PRI (Pain Rating Index) had higher mean value with 5.1 (SD=4.9), than affective PRI (M=0.8 SD=1.6). With regard to total PRI, mean values were around 6.0 with standard deviation of 6.2.
Most painkillers used were, primarily, tramadol and paracetamol (66.7%). Only one patient received non pharmacological measure for pain relief (Table 6).
More than half the sample (85.5%) has referred that professionals evaluated their pain by "asking them". Only 14.5% have referred having seen a ruler or a faces scale.
Most respondents (74.3%) have waited no longer than 10 minutes to receive medication after having reported pain. Three patients have asked for painkillers and have never received them (Table 7).
Only 3 (4.6%) patients have referred that the drug received has not relieved pain and had asked for a different drug, and these three patients have stressed that when they asked for a different drug, professionals took less than 10 minutes to administer it.
From 58 patients who, at data collection time, have referred pain (regardless of intensity), only 11 (19.3%) have referred they wished a higher drug dose. From remaining 47 patients, only 27 decided to justify why they did not wish a stronger drug. Most prevalent reason was "I don't need", with 59.3% (Table 8).
Forty-one percent of patients have referred having painkillers at home, being paracetamol the most frequently used (47.1%), followed by anti-inflammatory drugs (7.7%) and morphine (5.9%). Only 22.7% have maintained the drug during hospitalization.

Table 6. Distribution of answers of patients referring pain according to treatments or drugs to relieve pain (n = 48)

Treatments or drugs to relieve pain	n	%
Tramadol and paracetamol	32	66.7
Tramadol, paracetamol and clonixin	7	14.6
Paracetamol, morphine and tramadol	5	10.4
Paracetamol and metamizol	1	2.1
Ice	1	2.1
Metamizol	2	4.2

Table 7. Distribution of answers of patients reporting pain according to waiting time to receive analgesics when asked (n=70)

	n	%
10 or less minutes	52	74.3
11 to 20 minutes	1	1.4
21 to 30 minutes	3	4.3
31 to 60 minutes	1	1.4
More than 60 minutes	1	1.4
Asked but never received	3	4.3
Never asked	9	12.9

Table 8. Distribution of answers for the reasons for, in spite of pain, not having asked for a different drug (n=27).

	n	%
Don't feel I need	16	59.3
Because it is too much drug	3	11.1
Don't like to have medication which has not been prescribed and like to have medication in fixed schedule	2	7.4
Because more medication is not needed	4	14.8
I'm afraid it will hurt my stomach	1	3.7
Due to stomach gas	1	3.7

When asked about their level of satisfaction with pain treatment results, most were moderately happy (91.4%); however it should be stressed that 6 (8.6%) were not happy (moderately unhappy, unhappy and very unhappy).

DISCUSSION

Our study has shown prevalence of 52.5% within 24 hours, which has decreased to 41.1% at interview time. Although within the values presented by other studies[7,8,10-14,17], the fact that 24 hours later there were still 41.1% with pain means that virtually one out of two patients have pain, and that more might be done for their treatment. With regard to severe pain according to the visual analog scale (VAS) at interview time, only two patients have referred it.
When asked about the usual method adopted by professionals to evaluate their pain, only 14.5% have referred ruler or faces scale. These tools improve pain diagnosis, especially for the elderly, but our study has shown that professionals still do not systematically use them.
The fact of most patients referring pain were younger was not statistically significant. In fact, according to some authors, older patients are those who refer pain and this is a population where it is more undertreated, due both to polymedication and associated diseases[15].
Patients with more severe pain where admitted to general and orthopedic surgery services and had a surgical disease, which is in line with the literature[11,12]. These patients have more pain related to sensory changes in the scar zone in the long term. These are patients whose pain control should, then, be more rigorous; however they remain those with higher prevalence of pain. A Portuguese study[6] refers that, from 37% of chronic pain patients, 6% point the surgery as the cause. In our study, the most prevalent cause of pain referred by patients was musculoskeletal pain (54%). In other studies, most prevalent pain is equally musculoskeletal pain[18] and headache[19], however in chronic pain patients.
Most patients were medicated with tramadol and paracetamol, and only five patients had prescription of a stronger opioid. Since they were primarily surgical patients, it would be expected, in theory, that this percentage would be higher, although the small sample size does not allow for generalizations. However, in practice, this fear of strong opioids is well

documented. A study[16] has shown that, although oncologic nurses were aware of pain under treatment, the fear of adding opioids, of the interference with the diagnosis and of secondary effects has led to inadequate pain treatment.

Notwithstanding pain prevalence scores, the study has shown that most patients have waited no longer than 10 minutes for the drug, after having reported pain. The three patients needing more drugs have also waited less than 10 minutes. A study[7] shows that patients had waited 1 to 2 hours for additional analgesia.

Surprising is the fact that 47 painful patients at interview time have not asked for more drugs. This sample has recorded, in general, VAS below or equal 3, which may justify such attitude. Almost 60% of patients have justified it as "not believing they needed more medication". Remaining justifications are compatible with the barriers to pain treatment by patients: fear of secondary effects.

Even with pointed pain prevalence, the vast majority of patients were still happy with their treatment. This result is consistent with other studies[7,8,14,20]. Patients easily accept distress and pain associated to surgery and hospitalization. Our study has not evaluated satisfaction with professionals, but this may influence patients' opinion about pain.

This study was a guideline to develop a structured intervention for health professionals of a surgical service of the Hospital Center where it was carried out, since there is where pain prevalence is higher. The objective is to progressively expand this program of qualification and institution of clinical guidance standards to remaining services of the Hospital Center.

In the future, it would be interesting to repeat the prevalence study to evaluate the efficacy of the intervention by evaluating pain also in non communicating patients, since this is a limitation of this study.

CONCLUSION

Since pain is still undertreated, it is important to have studies such as this to allow a reflection about its prevalence, characteristics and places where actions are urgent.

Even with pain, most patients were happy with the treatment, which made us think about the need to also qualify patients, prompting them for their right to "not having pain" and the benefits resulting from this.

Also with regard to professionals, especially from surgical services, this study calls the attention for much that has to be done, especially with regard to fear of drugs.

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