

# Chronic Pain Education in Portugal: Perspectives from Medical Students and Interns

## O Ensino da Dor Crónica em Portugal: As Perspectivas dos Estudantes de Medicina e dos Internos do Ano Comum



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### ABSTRACT

**Introduction:** The International Association for the Study of Pain advocates a mandatory *curriculum* on chronic pain in medical schools. The objective of this study was to assess the opinions of final year medical students and interns about chronic pain education in eight Portuguese medical schools.

**Material and Methods:** Cross-sectional study. Online questionnaire (30 questions; voluntary and anonymous responses) available in the first quarter of 2016.

**Results:** A total of 251 responses were received from 142 finalists and 109 interns (women 72.9%; 25.3 ± 1.6 years). Pain is a vital sign (92.4%), but 18.7% only assessed pain if the patient complained of it. Pain self-assessment scales were known (87.2%), but the hetero-evaluation was not (70.9%). Pain was not assessed regularly because patients may not express pain; lack of time; short duration of consultations. Education was insufficient on opioids (78.1%), pathophysiology and treatment of pain (66.1%) and interviewing patients with pain (67.7%); it lasted 1 to 10 hours (median). Respiratory depression was the most worrying effect of opioids (56.2%). The risks of opioids outweigh the clinical benefit (33.5%).

**Discussion:** Education on chronic pain is scattered, unstructured and optional. More education is required in medical schools (98.4%). It should occur in year 5 and last more than 15 hours. Clinical stages are advised in chronic pain clinics.

**Conclusion:** There is a need for improvement in the medical undergraduate *curricula* so that young doctors develop competencies to adequately control pain and fight the avoidable suffering of their patients.

**Keywords:** Analgesics, Opioid; Chronic Pain; Education, Medical; Internship and Residency; Students, Medical

### RESUMO

**Introdução:** A Associação Internacional para o Estudo da Dor defende um *curriculum* mandatório sobre dor crónica nos cursos de Medicina. Foi objectivo deste estudo conhecer a opinião dos estudantes finalistas de Medicina e dos internos do ano comum sobre o ensino da dor crónica nas oito escolas médicas Portuguesas.

**Material e Métodos:** Estudo quantitativo. Questionário electrónico (30 questões), com respostas voluntárias e anónimas; disponível no primeiro trimestre 2016.

**Resultados:** Houve 251 respostas provenientes de 142 finalistas e 109 internos (mulheres 72,9%; idade 25,3 ± 1,6 anos). A dor é um sinal vital (92,4%); mas 18,7% apenas a avaliava caso o doente se queixasse. As escalas de auto-avaliação da dor eram conhecidas (87,2%) e as de hetero-avaliação não (70,9%). A dor não era avaliada porque o doente não manifestava dor; falta de tempo; consultas de duração curta. A formação foi insuficiente sobre opioides (78,1%), fisiopatologia e tratamento da dor (66,1%) e como entrevistar o doente com dor (67,7%); durou 1 a 10 horas (49,8%). A depressão respiratória por opioides é preocupante (56,2%). O risco de usar opioides é superior ao benefício clínico (33,5%).

**Discussão:** O ensino da dor crónica é disperso, pouco estruturado e opcional. Para 98,4% da amostra é relevante haver mais educação sobre dor crónica. Esta deve ocorrer no quinto ano do curso médico, com mais de 15 horas. São aconselhados estágios em consultas de dor crónica.

**Conclusão:** São necessárias mudanças nos *curricula* pré-graduados para que os futuros médicos desenvolvam competências e combatam o sofrimento 'evitável' dos seus doentes.

**Palavras-chave:** Analgésicos Opioides; Dor Crónica; Ensino Médico; Estudantes de Medicina; Internato e Residência

### INTRODUCTION

Chronic pain (CP), in addition to suffering and reduced quality of life, causes pathophysiological changes in immune, endocrine and nervous systems. These changes contribute to the emergence of organic and psychological comorbidities and can lead to the perpetuation of pain.<sup>1</sup> CP, persisting beyond the healing of the lesion that originated it, should be seen not as a symptom, but as a disease, as recognized by the EFIC (European Federation of the Inter-

national Association for the Study of Pain - IASP) in 2001.<sup>2</sup>

In Portugal, the prevalence of CP in the adult population is 36.7%, with an average duration of 10 years, recurrent or continuous in 85% of cases, with moderate to severe intensity in 68% of people.<sup>3</sup>

According to the National Program for Pain Control, all health professionals should adopt strategies for prevention and control of pain, contributing to the welfare of patients,

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reducing their morbidity and more humanization of health care.<sup>1</sup> There should be training strategies aimed at health professionals and the awareness of medical schools (MS) about the need to improve pre- and post-graduate *curricula* in the areas of pain.<sup>1</sup> The undergraduate curricular offer in health-related courses is deficient in disciplines dedicated to pain. In addition, in Portugal, continuing medical training in pain is not compulsory and lifelong learning is based on casual opportunities or personal tastes.<sup>4</sup>

The main objective of this study is to know the opinions about the teaching of CP of the final year medical students (FMS) and the interns (newly qualified graduates carrying out the first year of postgraduate medical training) (IFYR) in Portugal.

## MATERIAL AND METHODS

### Type of study

Quantitative.

### Participants

Convenience sampling composed by FMS and IFYR. Inclusion criteria: FMS must be enrolled in any of the eight Portuguese MS in the academic year 2015/2016; IFYR must be working in Portugal, in 2016. Exclusion criteria: IFYR who are graduates of any foreign MS.

### Data sampling

An online questionnaire was created from the Google Docs<sup>®</sup> software. The answers were voluntary, anonymous, unpaid and confidential. Each participant could only fill out a questionnaire. The data were only available to researchers. The questionnaire consisted of two parts. The first one, with five questions, aimed to characterize the sample. The second part, with 25 questions about CP, namely, general knowledge, classification, characterization, therapy and training. Each response was attributed a numeric code according to the order of entry in the study (R1, R2, R3, etc.). The collected data was uploaded to an Excel<sup>®</sup> file (with a password) on a computer whose access also depended on another password; both passwords were known only by researchers.

### Modus operandi

The Secretariats and the Student Associations of the eight MS were contacted requesting the submission of questionnaires to the mailing list of all FMS. In the case of IFYR, the questionnaires were shared in Facebook groups as "IACS 2016" and "Harrison 2016", as well as in the Facebook groups of each MS. The questionnaires were available online during the first quarter of 2016. Moreover, the authors searched throughout the websites of the eight MS to find out their undergraduate *curricula*, particularly disciplines related to CP education.

### Ethical considerations

The study was approved by the Ethics Committee of the Faculty of Health Sciences of the University of Beira

Interior, Portugal.

### Data processing

Excel spreadsheet (Microsoft Office 2016<sup>®</sup>).

### Data analyses

Data were analyzed using IBM<sup>®</sup> SPSS Statistics 20. Medians are expressed with the interquartile range. Categorical variables were compared using Chi-square or Fisher's exact tests, as adequate. Statistical significance was set at  $p < 0.05$ .

## RESULTS

The sample consisted of 251 individuals, mainly FMS (56.6%), women (72.9%), median age of 24 years (interquartile range 23 – 25; minimum and maximum ages of 23 and 45) (Table 1). Knowledge about pain assessment and CP are presented in Table 2 and Table 3, respectively. The recognized aspects of analgesics prescribed for CP appear in Table 4. The questions about CP education are presented in Table 5.

Figure 1 describes the frequency of prescription of opioids according to the existence of cancer. The most prescribed opioids – in the consultations or hospitalizations, where the participants were allocated (FMS) or worked (IFYR) – were: tramadol (n = 218), morphine (n = 10), fentanyl (n = 8), codeine (n = 6), buprenorphine (n = 3), tapentadol (n = 2), pethidine (n = 2), oxycodone (n = 1) and hydromorphone (n = 1).

## DISCUSSION

### Knowledge about pain

The majority identified pain as the 5<sup>th</sup> vital sign. This has been a cornerstone of the Portuguese Directorate-General for Health since 2003.<sup>5</sup> However, 18.7% of the sample thought that pain should only be assessed if the patient complained of it. Pain should be evaluated in all patients on a regular basis to optimize therapy and improve the quality of life.<sup>1,5</sup> More than half of the sample knew about pain self-assessment scales, especially the numerical '0 to 10' and the 'visual analog', as recommended.<sup>5</sup> It was found that seven out of ten participants did not know about hetero-evaluation scales; with less than 6% being able to name an appropriate scale. In non-communicating elderly, the Dolo-plus or other behavioral scales are recommended.<sup>6</sup> In newborns and children pain scales are based on expressions and behaviors, such as the Neonatal Infant Pain Scale.<sup>7</sup>

EFIC created the Pain Management Core *Curriculum* for European Medical Schools (PMCC) to simplify and improve pain education in MS.<sup>8</sup> This was based on the German Medical Licensure Act which was implemented efficiently in German MS.<sup>9</sup> For the PMCC, the use of scales facilitates the stratification of patients and allows more efficiency in first consultations. It is expected that medical students (MEDS) will be able to name at least one scale.<sup>8,9</sup> Pain scales, questionnaires and pain diaries complement the medical history that, in combination with physical examination, helps to

Table 1 – Characteristics of participants (n = 251)

|  | n   | %    |
|--|-----|------|
| <b>Sex</b>   |     |      |
| Male   | 68  | 27.1 |
| Female   | 183 | 72.9 |
| <b>Age group (years)</b>   |     |      |
| 23 - 25  | 195 | 77.7 |
| 26 - 28  | 27  | 10.8 |
| ≥ 29   | 29  | 11.5 |
| <b>Types of participants</b>   |     |      |
| Final year medical students  | 142 | 56.6 |
| Interns of first year residency  | 109 | 43.4 |
| <b>Medical schools (where participants studied or are studying in)</b> |     |      |
| Health Sciences School, University of Minho                            | 21  | 8.4  |
| Faculty of Medicine, University of Porto                               | 31  | 12.4 |
| Abel Salazar's Institute of Biomedical Sciences                        | 20  | 8.0  |
| Faculty of Medicine, University of Coimbra                             | 22  | 8.8  |
| Health Sciences Faculty, University of Beira Interior                  | 44  | 17.5 |
| Faculty of Medicine, University of Lisboa                              | 58  | 23.1 |
| Health Sciences Faculty, NOVA University of Lisboa                     | 45  | 17.9 |
| Faculty of Biomedical Sciences and Medicine, University of Algarve     | 10  | 4.0  |
| <b>Do you have another bachelor / master's degree?</b>                 |     |      |
| Yes  | 47  | 18.7 |
| No   | 204 | 81.3 |

plan a CP treatment. Thus, all MEDS should use pain assessment scales and make therapeutic decisions based on their scores. An intervention should be initiated when pain is greater than three (of ten), and all pain above seven should be considered an emergency.<sup>8,9</sup>

Pain is not evaluated in consultations and hospitalizations because patients do not seem to have pain or do not complain about it. More than a third of the sample attributed the absence of pain assessment to "lack of medical knowledge". Although a multidimensional assessment is recommended, it is necessary to have enough time;<sup>10</sup> almost half of the respondents mentioned that as a cause of non-evaluation. Without an appropriate assessment of pain, a professional duty, the right of the patient to adequate pain control is compromised.

More than 50% of respondents correctly enumerated important aspects to characterize pain and only 45% indicated the pathogenesis of pain. The PMCC emphasizes that all MEDS should be prepared to collect information about the quality of pain, its location and intensity, as well as aggravating or mitigating factors of pain.<sup>8,9</sup>

### Knowledge about chronic pain

The National Plan for the Fight against Pain defined CP as being prolonged and difficult to identify, etiological and temporally, producing suffering and being able to manifest in many ways, generating various pathological stages.<sup>11</sup> Half of the sample considered that the duration of CP ranged

from 30 days to 4 months; more than a third said CP lasted more than 4 months. The International Classification of Diseases (ICD-11) states that CP persists more than 3 months, in one or more anatomical regions, and is not explained by another clinical condition.<sup>12</sup> CP, while persisting beyond the healing of the lesion or the impossibility of detecting an injury, should be understood as a disease.<sup>1,13</sup>

Most people recognized CP as a syndrome, but only a third of the respondents recognized the unpleasant emotional experience. There was some confusion between CP (disease) and 'acute pain' (symptom): 11.2% of the sample associated CP with the alertness and the protective function that are attributes of the 'acute' phenomenon. For the majority, central sensitization is the main contribution to the complexity of CP, and less important is the activation of the descending pathways of pain. The PMCC recommends that all MEDS should understand the physiology of pain and peripheral/central sensitization leading to the complexity of CP.<sup>8,9</sup>

Most reported low back pain and knee/hip arthrosis as the main etiologies of CP. These were also identified in a recent Portuguese study, along with other osteoarticular and musculoskeletal disorders, as well as headaches and neuropathic pain.<sup>3</sup> Most of the sample stated that patients with pain refractory to analgesics should be referred to Pain clinics. In fact, all cases of undiagnosed, unresponsive or highly disabling pain should be referred.<sup>11</sup> However, almost a quarter of respondents defended the referral when "pain

Table 2 – Knowledge about pain assessment (n = 251)

|   | n   | %    | p       |
|---|-----|------|---------|
| <b>Is pain the 5<sup>th</sup> vital sign?</b>   |     |      |         |
| Yes   | 232 | 92.4 | < 0.001 |
| No  | 19  | 7.6  |         |
| <b>Should pain be assessed only in patients experiencing pain?</b>  |     |      |         |
| Yes   | 47  | 18.7 | < 0.001 |
| No  | 204 | 81.3 |         |
| <b>Do you know any pain self-assessment scale?</b>  |     |      |         |
| Yes   | 208 | 82.9 | < 0.001 |
| No  | 43  | 17.1 |         |
| <b>Please write down a pain self-assessment scale that you are aware of. You can write as many as you want.</b>   |     |      |         |
| Numerical 0 a 10  | 88  | 35.0 | < 0.001 |
| Numerical 1 a 10  | 12  | 4.8  |         |
| Scale of faces  | 35  | 13.9 |         |
| Analog visual scale   | 55  | 21.9 |         |
| Graphics scale / Graphics scale   | 5   | 1.9  |         |
| Do not know / do not respond  | 67  | 26.7 |         |
| <b>Do you know any pain hetero-assessment scale?</b>  |     |      |         |
| Yes   | 73  | 29.1 | < 0.001 |
| No  | 178 | 70.9 |         |
| <b>Please write down a pain hetero-assessment scale that you are aware of. You can write as many as you want.</b> |     |      |         |
| Scale of faces  | 19  | 7.6  | < 0.001 |
| Visual analog scale   | 12  | 4.8  |         |
| Numerical Scale   | 10  | 4.0  |         |
| Doloplus Scale  | 4   | 1.6  |         |
| BPS - Behavioral Pain Scale   | 4   | 1.6  |         |
| NIPS - Neonatal Infant Pain Scale   | 2   | 0.8  |         |
| The COMFORT scale   | 2   | 0.8  |         |
| Pain Scale of the World Health Organization   | 1   | 0.4  |         |
| Brief Pain Inventory  | 1   | 0.4  |         |
| N-PASS – Neonatal Pain, Agitation & Sedation Scale  | 1   | 0.4  |         |
| Descriptive Scale   | 1   | 0.4  |         |
| Glasgow Scale   | 1   | 0.4  |         |
| Scales of physiological and behavioral signals  | 1   | 0.4  |         |
| Do not know / do not respond  | 193 | 76.9 |         |
| <b>Why pain is not assessed as a routine in clinical practice? What reasons are there? Please write down.</b>     |     |      |         |
| Patient does not always manifest pain   | 206 | 82.1 | < 0.001 |
| Very short time allowed for consultations   | 134 | 53.4 |         |
| Lack of time  | 118 | 47.0 |         |
| Lack of medical knowledge   | 82  | 32.7 |         |
| It is a subjective symptom  | 57  | 22.7 |         |
| <b>What aspects do you consider the most to characterize a painful complaint?</b>                                 |     |      |         |
| Location  | 162 | 64.5 | < 0.001 |
| Intensity   | 187 | 74.5 |         |
| Quality (descriptive)   | 126 | 50.2 |         |
| Aggravating / mitigating factors  | 141 | 56.2 |         |
| Pathogenesis  | 113 | 45.0 |         |

does not alleviate with non-opioid analgesics". Most of the respondents were not aware of the clinical guidelines and national legislation on CP. This seems to express the reduced education on CP that FMS and IFYR have had, so far.

### Knowledge about analgesics prescribed for chronic pain

Most of the sample found that non-opioid analgesics were "often" prescribed for CP. In moderate to severe pain opioid use was reported by 17.5%. However, more than a third has "never" or rarely verified opioid use. It happened "sometimes"/"always" in cancer patients. In non-cancer situations opioids were never prescribed according to 12.7% of the respondents (*versus* 3.6% in cancer). Opioids remain the most effective and commonly used analgesics in moderate to severe pain, especially in cancer.<sup>14</sup> However, the

use of opioids in non-cancer CP is also recommended as they can help in patients' functional recovery, physically and mentally, and consequently, there is quality of life improvement.<sup>15</sup> Moderate to severe pain is not yet adequately treated, with opioids being prescribed rarely or infrequently, as noticed by a third of the sample.

Cancer CP is also inadequately treated due to the lack of knowledge in prescribing opioids and clinicians' inappropriate attitudes towards these analgesics.<sup>14,16</sup> In addition, there is reluctance of patients to report on their pain or to use self-assessment scales.<sup>17,18</sup> On the other hand, both clinicians and patients fear addiction and respiratory depression, which may lead to subclinical use of opioids even in cancer CP.<sup>14</sup>

Tramadol was the most prescribed opioid according to the respondents. This is because tramadol is a weak opioid,

Table 3 – Knowledge about chronic pain (n = 251)

|  | n   | %    | p       |
|--|-----|------|---------|
| <b>When do you consider that a patient is dealing with a chronic pain situation (from a temporal point of view)?</b> |     |      |         |
| <b>Please write down.</b>  |     |      |         |
| Less than 1 month  | 33  | 13.1 |         |
| More than 1 (or equal) and less than 4 months  | 127 | 50.6 |         |
| More than 4 (or equal) and less than 6 months  | 61  | 24.3 | < 0.001 |
| Six months or more   | 23  | 9.2  |         |
| Do not know / do not respond   | 7   | 2.8  |         |
| <b>What characteristics help you to diagnosis a chronic pain?</b>  |     |      |         |
| Unpleasant emotional experience  | 79  | 31.5 |         |
| Alert and protection functions   | 7   | 2.8  |         |
| Correlation with a specific occurrence or stimulus   | 10  | 4.0  | < 0.001 |
| Intensity is associated with the severity of injury / damage   | 11  | 4.4  |         |
| It is a syndrome   | 144 | 57.4 |         |
| <b>What elements contribute to the complexity of chronic pain?</b>   |     |      |         |
| Peripheral sensitization   | 25  | 10.0 |         |
| Central sensitization  | 147 | 58.6 | < 0.001 |
| Activation of ascending pain pathways  | 55  | 21.9 |         |
| Activation of the descending pathways of pain  | 24  | 9.6  |         |
| <b>What are the main causes of chronic pain in the Portuguese population?</b>  |     |      |         |
| Cancer   | 22  | 8.8  |         |
| Knee / hip osteoarthritis  | 60  | 23.9 |         |
| Low back pain due to disk pathology  | 134 | 53.4 | < 0.001 |
| Osteoporosis   | 13  | 5.2  |         |
| Migraine   | 22  | 8.8  |         |
| <b>When should a patient with chronic pain be referred to a pain clinic?</b>   |     |      |         |
| Whenever the patient manifests pain of any etiology  | 1   | 0.4  |         |
| When pain is moderate to severe  | 10  | 4.0  |         |
| When pain does not relieve with non-opioid analgesics  | 61  | 24.3 | < 0.001 |
| When pain is refractory  | 179 | 71.3 |         |
| <b>Did you know that there are clinical guidelines and national legislation about chronic pain?</b>                  |     |      |         |
| Yes  | 46  | 18.3 | < 0.001 |
| No   | 205 | 81.7 |         |

whose mechanism of action brings together  $\mu$  agonism and the inhibition of serotonin and adrenaline reuptake. It can be useful in nociceptive, neuropathic and fibromyalgia pain.<sup>19</sup>

More than half of the sample thought that respiratory depression was the most worrying effect of opioids, followed by addiction, constipation and nausea/vomiting. Clinical practice says that usual opioid side effects are: constipation, nausea/vomiting, drowsiness and pruritus.<sup>20</sup> Some rarer effects include respiratory depression, changes in body weight and hormonal effects (such as decreased adrenal gland activity, reduced sexual function and infertility).<sup>15</sup> Respiratory depression is extremely rare, and when it occurs, it is associated with dosage errors that can be prevented through well-performed clinical titration.<sup>8,9,20</sup> More than a third of the participants believe that risks of opioid use outweigh its clinical benefit. Opioids are the analgesics of choice for the treatment of moderate to severe nociceptive CP. They are effective, with dose manageable risks and are easy to titrate. Two of the effects associated with chronic opioid use are physical dependence and tolerance, which are often confounded by clinicians and patients with psychological dependence or addiction.<sup>14,15</sup>

Considering the PMCC guidelines, MEDS should know about opioids' pharmacodynamics and pharmacokinetics,

as well as the advantages and disadvantages of their prescription.<sup>8,9</sup> Training is required on the clinical use of opioids both in under and postgraduate education. This should move beyond prescription by also including multimodal pain management.<sup>8,9,21</sup> Appropriate education will allow clinicians to make prudent choices about initiating, continuing, modifying or discontinuing opioid therapy, considering patients' various contexts.<sup>21,22</sup>

### Education on chronic pain

Respondents, almost unanimously, stated that education on CP, particularly on pain physiopathology and pain management was of utmost importance in MS. Education was considered insufficient by respondents mainly on pathophysiology of CP, interview training with patients with CP, and prescription of opioids. Half of the sample had education on CP topics that lasted 1 to 10 hours.

In an European comparative study (15 countries, 242 MS), it was found that in France "pain medicine" was taught in undergraduate *curricula* in almost every MS (31 MS, 84% compulsory and 3% optional).<sup>23</sup> The "second best" was Switzerland (5 MS, 40% mandatory and 40% optional).<sup>23</sup> In Southern Europe, the framework was worse, like Spain (36 MS, 14% mandatory and 8% optional) and Portugal (7 MS,

Table 4 – Knowledge about analgesics prescribed to chronic pain (n = 251)

|   | n   | %    | p       |         |
|---|-----|------|---------|---------|
| <b>In patients with chronic pain, did you see / accompany a doctor who prescribed any non-opioid analgesics?</b>        |     |      |         |         |
| Never   | 6   | 2.4  |         |         |
| Rare / few times  | 26  | 10.3 |         |         |
| Sometimes   | 76  | 30.3 | < 0.001 |         |
| Often   | 135 | 53.8 |         |         |
| Ever  | 8   | 3.2  |         |         |
| <b>In patients with moderate to severe pain, did you see / accompany a doctor who prescribed any opioid analgesics?</b> |     |      |         |         |
| Never   | 6   | 2.4  |         |         |
| Rare / few times  | 81  | 32.3 |         |         |
| Sometimes   | 119 | 47.4 | < 0.001 |         |
| Often   | 44  | 17.5 |         |         |
| Ever  | 1   | 0.4  |         |         |
| <b>What is the most worrying effect of opioids?</b>   |     |      |         |         |
| Respiratory depression  | 149 | 56.4 |         |         |
| Addiction   | 42  | 16.7 |         |         |
| Constipation  | 29  | 11.0 |         |         |
| Nausea / vomiting   | 12  | 4.5  |         |         |
| Analgesic tolerance   | 4   | 1.5  | < 0.001 |         |
| Depression of the central nervous system  | 4   | 1.5  |         |         |
| Somnolence  | 2   | 0.8  |         |         |
| Pharmacological interactions  | 1   | 0.4  |         |         |
| Do not know / do not respond  | 21  | 8.0  |         |         |
| <b>About opioid prescribing, do you think that the risk is greater than the benefit?</b>                                |     |      |         |         |
| Yes   | 84  | 33.5 |         | < 0.001 |
| No  | 167 | 66.5 |         |         |

Table 5 – Education on chronic pain in medical schools (n = 251)

|  | n   | %    | p       |
|--|-----|------|---------|
| <b>Did you have enough training as to conduct an interview with patients with pain?</b>                  |     |      |         |
| Yes  | 81  | 32.3 | < 0.001 |
| No   | 170 | 67.7 |         |
| <b>Did you have enough education on the pathophysiology of chronic pain?</b>                             |     |      |         |
| Yes  | 85  | 33.9 | < 0.001 |
| No   | 166 | 66.1 |         |
| <b>How many hours did last the education you had on “pathophysiology and treatment of chronic pain”?</b> |     |      |         |
| 1 a 10   | 125 | 49.8 | < 0.001 |
| 11 a 20  | 13  | 5.2  |         |
| > 20   | 3   | 1.2  |         |
| Do not know / do not respond   | 110 | 43.8 |         |
| <b>Education on opioids and pain management. Was it enough?</b>  |     |      |         |
| No   | 196 | 78.1 | < 0.001 |
| Yes  | 55  | 21.9 |         |
| <b>Would it be important to have more education on pain pathophysiology and chronic pain management?</b> |     |      |         |
| No   | 4   | 1.6  | < 0.001 |
| Yes  | 247 | 98.4 |         |

14% optional).<sup>23</sup>

Pain curriculum in MS lasted 13 hours on average, in the United Kingdom,<sup>24</sup> and about 16 hours, in Canada.<sup>25</sup> Interestingly, pain education in Canadian veterinary schools lasted for 87 hours on average.<sup>25</sup>

In the United States of America, an extensive study (104 MS) revealed that classes on pain education lasted 9 hours (mean), with a median of 7 hours.<sup>26</sup> Only 4 MS have integrated pain courses with clinical cases and 17 MS have elective pain education.<sup>26</sup> There are some exceptions, such as the University of Washington’s MS, where a 4-year

integrated pain curriculum exists, with 25 hours (theory) and 318 hours (clinical elective courses).<sup>27</sup> Training based on multidisciplinary clinical cases improves knowledge and skills in bio-psycho-social assessment, pain narrative and risk assessment. In addition, it improves the understanding of CP as a complex disease and develops an interprofessional treatment policy centered in patients with pain. Consequently, future clinicians will be more prepared for clinical practice.<sup>27</sup>

Physicians have a central role in pain management.<sup>28</sup> There are unquestionable links between undertreatment

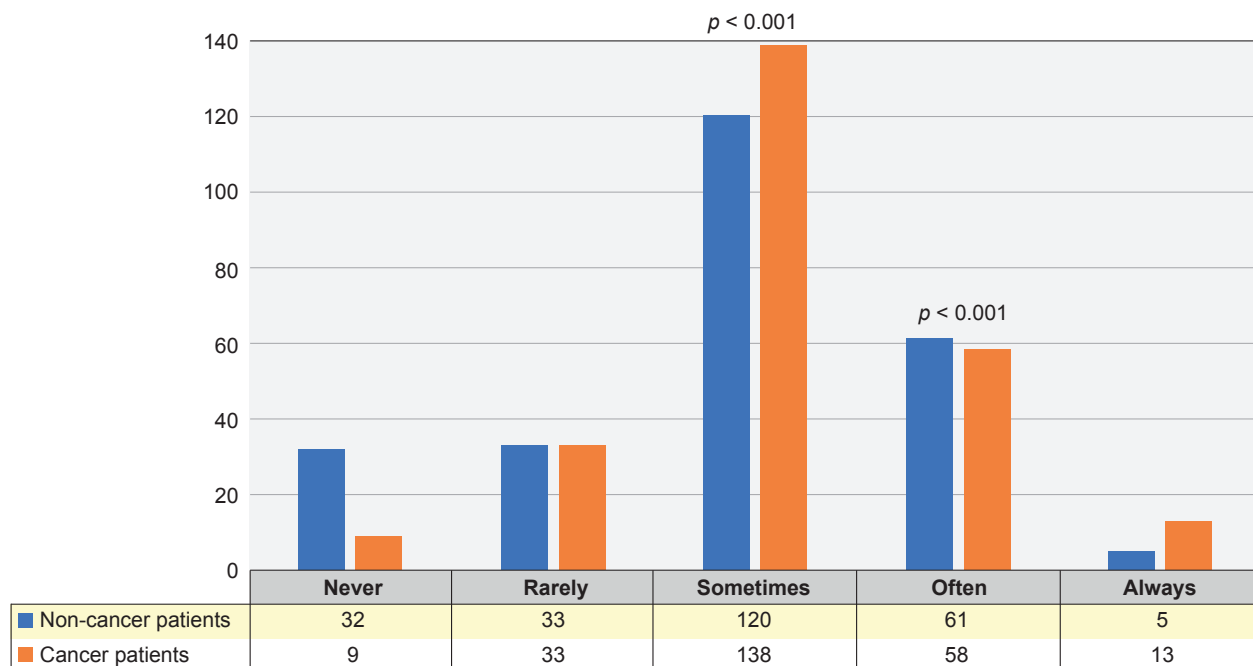


Figure 1 – Frequency of prescription of opioids according to the cancer status (n = 251)

of pain and the precarious pain education status in MS.<sup>26</sup> One barrier that prevents optimal CP treatment is the lack of education on adverse effects, communication, addition and tolerance.<sup>10,14,29-31</sup> Adequate CP treatment requires a consistent knowledge on pharmacology, psychology, physiotherapy and physiology of pain.<sup>21,22,28</sup>

### Education on chronic pain in medical schools in Portugal

In Portugal, the teaching of CP occurs in a dispersed way in some MS. In others, pain medicine is taught in optional curricular units (CUN). When the eight Portuguese MS websites were consulted, for the preparation of this study, it was noticed that acute pain (symptom) was privileged in undergraduate *curricula*, namely in disciplines related to anesthesiology and surgery (e.g. general and orthopedics). When the focus was CP the difficulty arose as curricular plans were thoroughly looked at.

In the MS websites of the Universities of Porto, Lisbon and Algarve, CUN contents were not specified, therefore it was not possible to understand where CP was taught nor its assigned workload.

In the MS website of the University of Minho, in Year 3, there was CUN Pathophysiology of the Organic Systems - Nervous System, where pain pathophysiology was considered. In years 4 and 5 there were CUN Medical Residency I and II, respectively, whose contents included "continued care in chronic illness, improvement of suffering, pain relief and palliative care". It is assumed that CP topics were addressed in those CUN, but assigned workload was not available.

In the MS website of the Abel Salazar Institute of Biomedical Sciences, it was found that, in year 5, there were two optional CUN on Palliative Care and Oncology, with 37 hours each, where it is assumed that CP topics were approached.

In the MS website of the University of Coimbra, it was noticed that, in year 4, there were two optional CUN: Palliative Care and Pain Therapy and Physical Medicine and Rehabilitation where CP teaching could occur, but no contents nor workload were disclosed. In year 2, in CUN Introduction to Medical Practice III there was teaching about end-of-life care. In year 3, in CUN Pharmacology I there was teaching about pain neurotransmission, neuromodulation, and pharmacology; and in CUN Ethics, Deontology and Professional Exercise pain and palliative care were considered. In year 5, in CUN Musculoskeletal Pathology generalized pain syndromes were explained. Unfortunately, there was no mention of the number of hours allocated to CP.

In the MS website of the University of Beira Interior, in year 1, in CUN Art of Medicine there were contents about pain, suffering and palliative care. In year 3, in CUN Introduction to Pathology, analgesics were mentioned in the Pharmacology block; in CUN Geriatrics there were contents associated with CP. In year 4, there was a course on Medical Oncology, where possibly cancer CP and its treatment were approached. Again, it was not possible to know the

assigned workload.

In the MS website of NOVA Medical School, education on CP was not mentioned. However, in years 4 and 5, in CUN The Elderly Patient and The Patient with Cancer, respectively, it is presumed that education on CP occurred; again, the allocated hourly load was not disclosure.

### Pain education: some considerations

The IASP recommends that MS should have an undergraduate pain *curriculum* in year 5, lasting more than 15 hours.<sup>32</sup> It is also important to attend clinical stages in the field of CP, namely in pain clinics.

Pain education is fragmented and limited by multiple disciplines, making the integration of knowledge more difficult and complex.<sup>4,28,33,34</sup> Some barriers hamper the implementation of CP teaching in MS, such as: the shortage of human resources, in particular pain specialists; the perception that pain medicine is not essential to medical education; the resistance to an increasing workload, allocated to pain education, in an already overcrowded schedule.<sup>10,14</sup>

The Institute of Medicine reports that the key-problems of MS are the lack of: diversity in the presentation of the topic 'pain'; integration between the basic sciences and clinical knowledge; clinical examples/models, particularly of specialists in CP.<sup>35</sup> In most academic medical centers, teachers self-report their competence in CP as inadequate.<sup>35</sup>

Pain education requires not only the teaching of anatomic-physiological processes and pain modulation, but also the transposition to clinical practice (diagnoses of CP and treatment strategies). This will allow better clinical intervention in all its bio-psycho-social complexity.<sup>4</sup>

The American Academy of Pain Medicine defends that MS *curricula* should foster competence and compassion.<sup>36</sup> Empathy and communication skills centered on the person with CP should also be integrated into undergraduate *curricula*.<sup>33,36-38</sup> Empathy is one of the qualities that improves physician effectiveness in the management of people with chronic diseases.<sup>36</sup>

In clinical settings it is known that MEDS learn to manage pain by imitating their tutors, adopting the beliefs and behaviors of their future peers. Clinical education with physicians of various specialties involved in the treatment of acute and CP can provide an optimal context for learning as well as for changing attitudes. Thus, MEDS should have tutors who are true examples of good practice in CP.<sup>31,39,40</sup>

As a recommendation for a new *curriculum*, MS should focus on integrated CP courses, which contain both cognitive and affective dimensions of CP,<sup>37</sup> with greater student-teacher involvement. It is also important to use the online platforms with didactic content and clinical case studies.<sup>27,36,37,39</sup> This is more appealing and interactive for MEDS, as they can comment and access links to complex topics. Advances in telecommunications, information science and technology provide an opportunity for MEDS to exchange knowledge and skills with teachers in academic centers of excellence, even though geographically dispersed.<sup>27,36,37,39</sup>

With this study the authors want to influence the entities



related to medical education in order to implement in the undergraduate *curricula* some disciplines associated with the diagnosis and treatment of CP. The authors believe that the implementation of these measures will attract more professionals to Pain Medicine, currently a certified competence/expertise by the Portuguese Medical Council.

### Limitations of the study

This study has several limitations.

A convenience sampling was used. The size and quality of the sample does not allow generalization of the results.

The method used presents some weaknesses, namely a great heterogeneity in the number of respondents by MS. The number of responders is particularly low in some MS with the highest number of FMS and IFYR, as the MS of the Universities of Porto and Coimbra, which limits the conclusions.

There were a small number of questionnaires answered, despite the efforts made. It was not possible to send the questionnaires directly to the IFYR, since there was no mailing list available. Some MS have put some obstacles in sending the questionnaires out to the FMS; namely, they requested that the Director and the Ethics Committee of each MS should be formally contacted and asked for a term of authorization. When the number of FMS enrolled in each of the eight MS was requested electronically, only two MS replied. It should also be noted that no MS confirmed, as it was requested by the authors with some anticipation, whether they had sent the questionnaires to the FMS mailing list or not.

The collected data were uploaded to an Excel® sheet, which allowed the authors to understand the frequencies of the answers, but limited the statistical analysis of the data, namely the associations between some of the variables.

### CONCLUSION

In this survey it was found that, although most of the 251 respondents considered pain as the 5th vital sign, almost 1 in 5 people thought that pain should only be evaluated if the patient complained of it. Most of the sample could properly name some pain self-assessment scales, but few were able to name hetero-evaluation scales. Most said that pain was not assessed in consultations/hospitalizations because patients did not manifest their pain and more than a third indicated “lack of medical knowledge” as a reason. In moderate

to severe pain, the use of opioids was reported by one sixth of the sample. More than a third of the respondents believed that the risks of opioid use outweigh its clinical benefit. Half of the participants were fearful of respiratory depression.

This study highlights the need for MS to provide more education about CP in the undergraduate *curriculum*. In fact, MS need a greater investment in the field of CP that will allow MEDS to pour the indispensable theoretical knowledge into a transforming reality. The vision of future physicians, therefore, will modify; they will feel empowered and will contribute to fight the avoidable suffering of their putative patients. Consequently, MEDS and young doctors will strive to respectfully dignify the Montreal Declaration, facilitating the access of vulnerable people to pain control, as a fundamental human right.<sup>41</sup>

The IASP chose 2018 as the Global Year for Excellence in Pain Education with interventions in 4 domains: public and governmental education, patient education, education of professionals and research on pain education.<sup>42</sup> This is a Portuguese contribution.

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### PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association.

### DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication. Patient consent obtained.

### CONFLICTS OF INTEREST

All authors report no conflict of interest.

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