

Avaliação da Dor Crónica Pós-Operatória: Metodologia e Importância

Assessment of Chronic Postoperative Pain: Methods and Relevance

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Resumo

Introdução: A dor crónica afeta até 20% da população nos países desenvolvidos e o ato cirúrgico é uma das suas causas principais. Doentes com dor crónica pós-operatória necessitam de terapêuticas multidisciplinares prolongadas refletindo-se em gastos económicos avultados. O controlo eficaz da dor ajuda a diminuir a morbimortalidade nestes doentes, melhorando ao mesmo tempo funções relacionadas com a saúde. Uma avaliação adequada da dor está na base da sua gestão. Apesar de numerosos avanços científicos alcançados na compreensão da dor e da sua neurofisiologia, não existem ainda orientações bem definidas para uma avaliação precisa da mesma. Dado o elevado impacto económico e clínico da dor pós-operatória, os métodos que a avaliam assumem particular relevo para a equipa médica no contexto pós-cirúrgico.

Objectivo: Neste estudo pretendemos rever a literatura mais recente relativamente à dor crónica pós-operatória, destacando as diferentes metodologias de avaliação da dor crónica e quais os alvos de avaliação desta.

Métodos: Esta revisão foi efetuada com recurso à base de dados PubMed, focando-se na literatura dos últimos 13 anos acerca deste tema. Foi efetuada uma seleção utilizando as seguintes palavra-chave: “postoperative pain”, “chronic pain”, “persistent postsurgical pain”, “pain scales”, “McGill Pain questionnaire”, “brief pain inventory”, “questionnaire”, “guidelines”, “pain experience”, “measurement”, “assessment”, “verbal rating scales”, “numeric rating scales”, “pain satisfaction” and “outcome measures”. A escolha, avaliação da qualidade metodológica e a seleção final foram feitas pelos autores.

Resultados: Existem várias escalas de dor usadas para avaliar e estudar a dor crónica pós-operatória. Estas variam desde escalas rápidas de intensidade da dor até questionários extensos que cobrem as múltiplas dimensões da experiência da dor e funcionamento global do doente. Para além da avaliação da intensidade, qualidade e temporalidade da dor, outros itens devem ser estudados. O bem-estar emocional, problemas relacionados com o sono, a fadiga e o gozo da vida foram identificados como os aspetos mais afetados para o doente. Existem métodos que se focam quer no bem-estar emocional quer na qualidade de vida associada à saúde. Alguns estudos sugerem que avaliar a sensibilidade à dor recorrendo a medidas de *Quantitative Sensory Testing* pode ser relevante na avaliação e tratamento de doentes com dor crónica.

Conclusão: Existem várias ferramentas certificadas na avaliação de aspetos associados à dor. Os resultados da pesquisa sugerem e realçam a importância de avaliar o doente com dor crónica e não apenas a dor. O bem-estar físico, emocional, social e a interferência da dor na qualidade de vida devem ser estudados nestes doentes.

Palavras-chave: Avaliação da Dor; Dor Crónica; Dor Pós-Operatória; Inquéritos e Questionários

Abstract

Introduction: Chronic pain affects up to 20% of the population in western industrialized countries, and surgery is one major cause. Patients with persistent postsurgical pain are in need for long-term rehabilitation and multidisciplinary treatments that account with billions of dollars in annual medical expenditures. Effective pain management helps decreasing morbimortality in these patients, improving at the same time health related functions. Optimal pain assessment is the foundation for its management. Despite many scientific breakthroughs in the understanding of pain and its neurophysiology, precisely assessing and diagnosing a patient's chronic pain problem is not yet straightforward or well-defined. Given the high clinical and economical impact of postoperative pain, methods of assessing chronic pain are of great deal of importance for the health care team in postsurgical context.

Objective: In this study, we aim to review the most recent literature about postoperative chronic pain, focusing on the different pain assessment tools and outcomes measures that should be evaluated.

Methods: This review was performed using the PubMed database, focusing on the literature of the last 13 years. A selection

was performed using the following keywords: “postoperative pain”, “chronic pain”, “persistent postsurgical pain”, “pain scales”, “McGill Pain questionnaire”, “brief pain inventory”, “questionnaire”, “guidelines”, “pain experience”, “measurement”, “assessment”, “verbal rating scales”, “numeric rating scales”, “pain satisfaction” and “outcome measures”. Screening, assessment of methodological quality and final selection were undertaken by the authors.

Results: There are several scales used to evaluate and study chronic pain that can be used in postoperative context. These instruments range from quick, one-item assessments of pain intensity, to long surveys that tap into multiple dimensions of the pain experience and overall functioning. In addition to evaluate pain intensity, quality and temporal aspects of pain, other outcomes should be assessed. Emotional well-being, sleep-related problems, fatigue and enjoyment of life were identified as the most affected outcomes for the patient. There are assessment tools targeting health related quality of life and emotional well-being. Also, some studies suggest the assessment of pain sensitivity by the means of Quantitative Sensory Testing as it may be relevant in evaluating and treating chronic pain patients.

Conclusion: There are several accepted tools for tracking pain-related treatment outcomes. These results suggest the importance of assessing the patient with chronic pain and not just the pain. Emotional and social well being, physical function and pain interference with quality of life should be studied in these patients.

Keywords: Chronic Pain; Pain Measurement; Pain, Postoperative; Surveys and Questionnaires

INTRODUCTION

Chronic pain affects up to 30% of the adult population of the USA^{1,2} and up to 20% in western industrialized countries.³ In the Portuguese adult population, chronic pain prevalence is even higher, 36.7%, as determined by Azevedo L *et al.*⁴ Not only persistent pain is highly prevalent, as it affects the individual with pain, his significant others and the society. Chronic pain determines the use of long-term rehabilitation and multi-disciplinary treatments involving large billions of dollars in annual medical expenditures. Also, there is to expect a decreased workers’ productivity, therefore contributing to indirect costs.^{1,5}

Chronic pain is defined as persistent pain which can be either continuous or recurrent and of sufficient duration and intensity to adversely affect a patient’s well-being, level of function, and quality of life.⁶ The cut-off point in time from which chronic pain is said to be established varies between twelve weeks and six months.^{6,7} IASP definition of chronic pain sets 3 months as the cut-off point.^{4,8}

A major cause of chronic pain is surgery. A survey to patients expecting surgery showed that 59% of them concerns regarding pain following the surgical procedure.¹ Data shows that this fear has reasons to be. Evidence suggests that up to 75% of patients’ experience pain after surgery^{5,9} and that less than half of patients who undergo surgery report adequate postoperative pain relief.^{10,11} If this pain endures past normal healing time, chronic postoperative pain (CPOP) may establish.

An attempt to define characteristics of CPOP specifically was made by Macrae⁷:

- The pain should have developed after a surgical procedure.
- The pain should be of at least 2 months’ duration.
- Other causes for the pain should be excluded, for example, continuing malignancy (after surgery for cancer) or chronic infection.
- The possibility that the pain is continuing from a pre-

existing problem should be explored and exclusion attempted.

Nevertheless, there is no standardized definition for chronic pain after surgery and most epidemiological studies use the International Association for the Study of Pain (IASP) definition for chronic pain.¹²

CPOP has an estimated mean incidence of 30%^{13,14} and can be severe in about 2% – 10% of these patients.^{13,15 -18}

These data vary depending on the definition of CPOP and the type of surgery performed.^{7,1519-21} Single or multicenter participation, the design of the study and the clinical level of care and surgical expertise are also important variables.²²

Amputation, thoracic surgery, breast surgery and total knee/hip replacement have the highest CPOP prevalence.^{16,20,23-25}

Laparoscopic cholecystectomy, laparoscopy, inguinal herniorrhaphy or arthroscopy are generally viewed as less invasive procedures yet they also report CPOP in 4% - 8% of patients.^{18,22} Results from a cross-sectional epidemiological study realized in Portugal shows that 6% of chronic pain patients are related to surgical interventions.⁴

Despite CPOP being a major problem, patients are not involved in a discussion regarding this issue. CPOP is not being fairly discussed between health care providers and patients. Twenty per cent of patients suffering from chronic pain feel that their doctors do not see their pain as an actual problem and 40% of the same population of patients said that their doctors would rather treat the illness rather than their pain.⁸ Also only 20% of patients that were expecting surgery did discuss with their health care practitioner the subject of persistent postoperative pain.¹⁹

Despite scientific progress in the understanding of the neurophysiology of pain, precisely assessing and diagnosing a patient’s chronic pain problem is not straightforward or well-defined.

In this study, we aim to review the most recent literature about postoperative chronic pain, focusing on the

different outcomes measures that should be assessed in a multidimensional approach to a chronic postsurgical patient with pain.

METHODS

SEARCH STRATEGY

This review was performed during the last months of 2016 and focused on the literature of the last 13 years. The Pubmed database was searched using the following keywords (Appendix 1): "postoperative pain", "chronic pain", "persistent postsurgical pain", "pain scales", "McGill Pain questionnaire", "brief pain inventory", "questionnaire", "guidelines", "pain experience", "measurement", "assessment", "verbal rating scales", "numeric rating scales", "pain satisfaction" and "outcome measures". The final query can be found in the appendix (Appendix 1). All references were also reviewed for completion of the research.

EXCLUSION AND INCLUSION CRITERIA

We included studies published during the last thirteen years (from 01/01/2004 to 31/10/2016), in English or in Portuguese, and involving humans. Clinical trials, reviews and systematic reviews were included.

SELECTION STRATEGY

Our search yielded a total of 654 articles (Appendix 2). The first selection was performed by screening the titles, considering our exclusion criteria, and 507 articles were excluded. Then we conducted a second selection by reading the summaries of the remaining articles. 95 papers were excluded in this phase. From the remaining 52 articles, 6 papers were excluded after careful reading. Fifteen articles were included after careful revision of the references of selected literature. Appendix 2 illustrates the process of screening and selection of the information.

RESULTS/DISCUSSION

POSTOPERATIVE PAIN

Studies suggest that postoperative pain is a type of inflammatory pain. This type of pain is triggered by the release of inflammatory chemicals such as prostaglandins that directly stimulate primary sensory nerves. Pain information is then driven to the spinal cord. Redness, heat and swelling at the pain site constitutes the hallmarks of inflammatory pain.²

In the operative setting, damage or dysfunction of the nervous system is common and neuropathic pain may develop explaining why chronic pain in most postsurgical patients closely resembles neuropathic pain.^{6,15}

Neuropathic pain is defined as a trigger point-induced sharp pain. Burning, tingling, sharp, numbness and

itching sensation that do not diminish spontaneously are characteristic²⁶ and are due to primary lesion or dysfunction in the peripheral or central nervous system.^{1,27}

Not only studies suggest that iatrogenic neuropathic pain is the most important cause of long-term postsurgical pain,⁶ as it is also associated with chronic pain of higher intensity, has greater impact on patients' lives and pain tends to persist longer.²⁸ Surgical approaches with a higher risk of nerve damage defines a risk factor for developing postoperative chronic pain. Others are preoperative pain, severe postoperative pain, prolonged surgery, younger age and some psychological or depressive symptoms.²⁹

ASSESSMENT OF POSTOPERATIVE CHRONIC PAIN

Some patients avoid talking about pain thinking it might be a form of complaining, believing that postsurgical pain is unavoidable or because they do not want to express weaknesses.¹ In an attempt to avoid missing cases of untreated or undermanaged postoperative pain, pain assessments should be carried out frequently and systematically, ideally according to a schedule.

Although there have been many scientific advances in the understanding of the neurophysiology of pain, assessing a patient's chronic pain problem is not yet straightforward or well-defined.

This proves to be a major problem since postoperative chronic pain assessment is the ultimate foundation of postoperative pain care. Only evaluating pain, we can determine whether its management is adequate, if analgesic or analgesic dose changes are required or if additional interventions are needed.¹¹ Poor or ineffective assessment of postoperative pain leads inevitably to its bad managing, the result being unrelieved postoperative pain. Clinical and psychological changes arise from postoperative pain increasing morbidity, mortality, as well as costs. Quality of life is also diminished.³⁰ Some clinical negative outcomes include pneumonia, deep vein thrombosis, coronary ischemia, myocardial infarction, pulmonary embolism, poor wound healing and insomnia.^{5,31}

Pain is different from other signals of the human body as heart rate or body temperature, as there is no specific diagnostic method to measure or quantify it. It is also important to remember that finding pathology on diagnostic tests does not necessarily prove that the identified pathology is causing the patient's pain.¹

Pain measurement depends on patient-health practitioner interaction, collaboration and communication. Knowing what pain feels like in other individuals, depends on their behavior and speech. In situations where the pain is greater than expected from a given cause or when there is no obvious one, the ability of human subjects to reflect

on their subjective experience becomes of considerable advantage.

The use of patient-centered outcomes is also supported by the fact that yesterday's passive patient is now an educated consumer empowered through access to information on the Internet. Taking patient's view into account increases patient satisfaction with care, compliance with treatment programs and hopefully helps patients maintain a continuous relationship with the health care provider.

There are many tools accessing pain intensity like Numerical Rating Scales, yet some studies underline the importance of assessing other outcomes besides pain itself. In 2002, an organization called IMMPACT (Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials) was formed to help develop evidence-based consensus recommendations regarding the assessment of patients with pain, and thus helping the design and interpretation of clinical trials in this matter.

IMMPACT has identified 19 aspects of their lives that were significantly impacted by the presence of their symptoms, by taking opinions of people who were experiencing chronic pain. Emotional well-being, fatigue, weakness, sleep-related problems and enjoyment of life in general were the outcomes most affected and meant the most for the patient.³²

Apart from documentation of pain location, intensity, quality, onset/duration/variations/rhythms, manner of expressing pain, pain relief, what makes it worse, effects of pain and a pain plan, evaluation of a patient's postoperative chronic pain requires a much wider approach.

Areas of functioning, including emotional, social, as well as physical functioning are fundamental in this goal of CPOP assessment.³³ Finally, assessments should also take into account what interventions have been effective for the pain, how the pain affects function, the type of pain (eg, neuropathic, visceral, somatic, muscle spasms), and whether there are barriers to effective pain management, such as cultural or language differences, cognitive deficits, or patient misconceptions about pain management.

In resume, the tools to assess CPOP should:

- be appropriate to the person regardless of age, race, creed, socioeconomic status and psychological or emotional background;
- include a multidimensional scale since chronic pain affects a person's entire being;
- address location, quality, sensory characteristics, intensity, duration, aggravating and alleviating factors, variability and predictability;
- be used early in the process of patient evaluation.

KEY ELEMENTS IN CHRONIC POSTOPERATIVE PAIN ASSESSMENT

A comprehensive pain assessment of the person with chronic pain should be guided by three central questions:

- 1-What is the magnitude of the illness?
- 2-What is the extent of the patient's disease or injury (physical impairment)?
- 3-Does the individual's behavior seem appropriate to the disease or injury, or is there any evidence of symptom amplification for any of a variety of psychological or social reasons?¹

Regarding CPOP as a chronic pain caused by surgery, it seems appropriate to use these three central questions also as guidelines in postsurgical pain assessment. It is not just the pain, but the whole individual that should be evaluated. Pain can only be assessed indirectly based on patient's verbal and non-verbal communication.

For a start, history and medical examination information should be collected.³⁴ The goals here are to understand if the pain could have been caused by surgery, collect information of other related symptoms, assess the necessity of additional diagnostic testing and evaluate the availability of treatment. As for physical examination, the musculoskeletal system and the nervous system are especially involved in chronic pain.²

In the musculoskeletal system, we should pay special attention for obvious signs of deformity, atrophy, cyanosis or asymmetry of limb temperature. Finally, identification of pain trigger points and palpation for areas of spasm or tenderness are also valuable.²

Regarding the neurological system, a careful evaluation looking for allodynia, hyperalgesia or alteration of muscle strength should be performed due to the neurophatic pain component in chronic postsurgical pain.

It is also important to elicit any history of depression or other psychopathology that may affect the perception, report and display of pain. Unmanaged disorders such as depression and anxiety are known to correlate with perioperative pain and may interfere with the patient's ability to collaborate.^{1,35,36}

A complete evaluation of CPOP should assess the patient not only at rest, but during controlled movements, as pain can be inexistent at rest and severe during movement. Evaluating physical outcome measures should provide information regarding more than just symptomatic relief, moving into the impact of chronic postsurgical pain on individuals', a primary concern for patients.³⁷

Impact on daily life activities and quality of life should be questioned and should be included in the CPOP assessment.¹

Patient self-report is the most reliable indicator of the existence and intensity of pain¹ and represents the gold

standard approach to pain assessment, reflecting the inherently subjective nature of pain.^{11,29,30,38}

Recognizing the multidimensional nature of pain, some core outcome domains have been established in the context of CPOP. Pain but also physical function, pain interference with quality of life, emotional function, global ratings of outcome, other symptoms and adverse events during treatment, must be assessed in chronic postoperative pain context.^{29,39,40} Pain as an outcome should include its intensity, quality and temporal aspects.⁴¹

CHRONIC POSTOPERATIVE PAIN ASSESSMENT TOOLS

1. PAIN INTENSITY

There are single and multi-dimensional assessment tools evaluating one or more aspects of pain. Several tools are useful to assess pain intensity such as visual analogue scales, numeric or verbal rating scales, Wong-Baker FACES pain rating scale and pain thermometers.¹¹

Here we summarized three valid and reliable unidimensional pain measures widely used to assess pain intensity.

Verbal Rating Scale (VRS): VRS is categorized in five specific terms that describe its intensity, being “no pain” and “worst pain possible” the extremes of this scale. In between there is to find “mild”, “moderate”, or “severe” pain. Not only VRS provides good feedback, as it is also very intuitive and easy to use and respond.⁴² On the other hand, patients with trouble communicating because of their cognitive impairment or language barriers represent an obstacle for the use of VRS.¹

Visual Analogue Scale (VAS): VAS usually consists in a straight line of 10 cm in length, with marks in the extremes, zero and ten. Zero indicates no pain and ten reveals the worst pain possible. It may also contain marks in between zero and ten representing each centimeter. Other limits may present such as zero to five. The patient should then draw a vertical line in VAS where he feels it better correlates with his pain status.^{9,42,43}

Numerical Rating Scales (NRS): NRS is very similar to VAS, the difference being that the patient selects a number ranging from zero to ten but here he only selects the number instead of marking it with a line.¹ NRS can be performed in patients with lack of clear vision or dexterity problems. Studies differ on whether there is a specific tool from the above with better responsiveness in detecting improvement related to rating pain treatment. VAS is somewhat more abstract than NRS, probably explaining the greater missing data found at VAS measures in some studies. On the other hand, VRS's smaller number of response options can produce less sensitive results.^{34,42}

2. PAIN QUALITY, LOCATION AND TEMPORAL ASPECTS

Apart from its intensity, there is also been described qualities in pain categorized as affective (e.g: fearful, sickening, tiring) and sensory (e.g: sharp, stabbing, throbbing). While intensity can reproduce magnitude of pain, pain qualities reflect the suffering caused by the pain. The importance of addressing these pain qualities in chronic pain assessment is demonstrated by the fact that the efficacy of pain treatments varies according pain qualities.²⁹

Multi-dimensional tools encompass pain qualities, as well as location (e.g using body maps) and temporal aspects of pain.

McGill Pain Questionnaire (MPQ): MPQ encompasses assessment of pain in quality, intensity, location and temporal aspects. Studies have determined validity of MPQ in assessing both sensory and affective components of pain.^{34,44-47} Because MPQ used seventy-eight pain descriptors, faster assessment of patients led up to the development of a short form of this questionnaire, Short Form-McGill Pain Questionnaire (SF-MPQ). The SF-MPQ consists of fifteen pain descriptors (eleven sensory and four affective), which the patient is asked to rate their intensity on a scale from 0 to 3 (severe). Pain intensity is evaluated by a 0-5 VAS.^{29,34,44}

Attending to the fact that pain in patients with persistent postsurgical pain share similar characteristics with neuropathic pain patients some new pain descriptors were added, thus resulting SF-MPQ-2.^{15,21} These added characteristics are extremely pertinent in the context of neuropathic pain. They are “dull”, “electric-shock”, “cold-freezing”, “pain caused by light touch”, “itching”, “tingling or ‘pins and needles’” and “numbness”

These pain descriptors, a total of twenty-two, are rated recurring to an NRS of 0-10.⁴⁵

Because of being simpler than MPQ, the shorter versions do not assess temporal or location aspects. The MPQ was validated and translated to Portuguese language.⁴

Brief Pain Inventory (BPI): BPI assesses not only pain intensity, including at rest, but also its location and the way pain affects the individual in his daily life.^{29,34,48} BPI has been used to assess chronic pain and its validity has been established.⁴⁸ Similarly to MPQ, there is also a shorter form of this questionnaire, the Brief Pain Inventory Short-Form (BPI-SF). A body map is here presented regarding the location of pain felt by the patient.⁴⁹ It comprises a NRS ranging from zero to ten regarding patient's worst and least pain felt in the last 24 hours, its average pain, and pain intensity at the moment of assessment. Some scores were developed to provide categorization of pain in moderate or severe.⁴⁸ BPI-SF also evaluates interference of pain in: general activity, walking, normal work, relations with other

people, mood, sleep, and enjoyment of life. A NRS is used scaled zero to ten, where zero means “no interference” and ten means “total interference”. The greater the score, the greater the interference of pain in everyday life. Finally, there are two questions regarding the use of medication and the relief that the medication provides.³⁴

3. PAIN NEUROPATHIC CHARACTERISTICS

Chronic postoperative pain closely resembles neuropathic pain due to nerve damage caused by the surgery. Additionally studies suggest that when neuropathic characteristics of pain are identified, chronic postoperative pain tend to persist longer and at higher intensity.²⁸ As so correctly and early identification of neuropathic pain in patients with chronic postoperative directly influences options of treatment and ultimately determines therapeutic success and patient satisfaction.^{50,51}

Douleur Neuropathique 4 Questions (DN4)

questionnaire: DN4 is a pain assessment tool targeting the neuropathic component of pain. These pain descriptors are: burning, painful cold, electric shock sensation, tingling, pins and needles, numbness, itching and hypoesthesia.^{21,52} Differently to BPI or MPQ, DN4 does not present NRS, VRS or even a VAS. Ten symptoms at total are assessed with a “yes/no” approach. The score is calculated by attributing a value of one for each positive answer, inversely a negative answer is attributed with a zero pontuation. Adding these ten values the total score is obtained. A score equal or higher than four, positive DN4, establishes the diagnosis of neuropathic pain.^{52,27} Studies demonstrate that a positive DN4 is associated with persistent postoperative pain intensity likely to increase with time and with higher risk of developing a mild to severe persistent post-surgical pain.¹⁶ Finally, it is suggested that pain presented with neuropathic components stands as an independent risk factor for quality of life impairment.⁵³

S-Leeds Assessment of Neuropathic Symptoms and Signs Pain Score (S-LANSS)

S-LANSS: S-LANSS similarly to DN4 also presents as a pain score rather than a pain scale because its primary goal is to establish a neuropathic component of pain. Also, it presents in a “yes/or” referring to usual neuropathic descriptors of pain, only adding color change when compared to DN4. S-LANSS determines a temporal aspect in the assessment, where the descriptors of pain are related to the “last week”.^{25,34,54,55} Differently than DN4 but likewise BPI it presents a body map, and a NRS ranging from zero to ten (severe pain).⁵⁵ S-LANSS is considered positive depending on an optimum *cut-off* score, generally twelve, designed for the study.^{27,55} A positive result identifies a neuropathic component in the patient’s pain. It is suggested that a patient with neuropathic component of pain respond differently to analgesic management and

might then considering therapies more complex than just conventional analgesia.⁵⁵

4. PHYSICAL FUNCTION AND HEALTH-RELATED QUALITY OF LIFE

Patients suffering from chronic pain after surgery often are unable to perform or succeed in activities of daily life or hobbies, previously executed naturally. Incapacity to fulfill tasks or dearest hobbies reflects in patient’s quality of life. Several assessment tools are available to measure and describe a patient’s functional ability.

IMMPACT recommendations note that many of the most objective measures of physical functioning are dependent on patients’ co-operation. These “voluntary” behaviors are potentially influenced by the range of HRQOL domains, including psychosocial factors (e.g., mood, attention, pain related attitudes and beliefs) and thus cannot be considered “pure” measures of physical ability. Depression, pain-related fear, and catastrophizing are associated with increased interference leading to poor clinical outcomes.²⁹

Short Form Health Survey (SF): SF are an assessment tool measuring quality of life of the patient that may be used to study the impact of pain in the patient suffering from pain. The SF-36 addresses mental and physical health, encompassing eight domains with subdivisions in each one. The eight domains assessed by the SF-36 are: general health, physical functioning, social functioning, bodily pain, mental health, role limitations due to physical problems, role limitations due to emotional problems and vitality. Domains have their own score which is then grouped and converted into a zero-one hundred scale. For all scales, higher scores reflect better health. SF tools have been validated and its reliability is recognized in several contexts and some involving chronic pain assessment.⁴⁸

5. EMOTIONAL FUNCTION

The patient with postoperative chronic pain is highly affected in their emotional and psychosocial aspects. The pain’s intensity, the lack of sleep, the fatigue, not being able to address everyday life activities as the patient was used to, it all could conjugate to produce psychological distress. Some psychiatric conditions may arise such as depression, anxiety or anger.²⁹ On the other hand, already depressed patients, with the appearance of the chronic postoperative pain, might deal with the pain worse than not depressed patients, having few strategies to deal with the pain.⁵⁶

The Depression Anxiety Stress Scales (DASS): DASS is one measurement tool in the field of emotional and psychological well being. It assesses problems in the patients related to depression, anxiety and stresses. Assertions specific to these three domains can be responded in a VRS of four-point frequency from “did not apply to me at all” to “apply

to me very much". DASS scales had already demonstrated reliability and has been used in evaluating the patient post hip-surgery, in the context of postoperative chronic pain.³

6. GLOBAL ASSESSMENT OF OVERALL RECOVERY

A method where the patient can combine all the different components of pain, reflect about its subjective experience and self-evaluate his perception about his condition is proposed by several studies.^{29,39} Patient Global Impression of Change (PGIC) scale is one example used in chronic pain clinical trials. This tool allows a quick understandable response as where the patient sees himself, before and after starting treatment for his pain condition. PGIC presents six questions linked with a seven-point scale related answer. These six questions comprise all big domains that should be assessed in the postsurgical context of pain, regarding physical function, emotional and social well being, interference in everyday activities, and pain itself. The seven-point scale ranges options from "1 – very much improved" to "7 – very much worse".^{29,39}

OTHER ASSESSMENT TOOLS

Earlier we discussed pain and the importance of communication in the assessment of a clinical sign that can not be quantified objectively. Yet there several patients unable to talk and others have cognitive impairment preventing health practioners to withdraw reliable conclusions. Behavioral observations can be of helpful in these situations.^{30,34} Attention to signs as distorted postures, grimacing, grunting, muscle tension, agitation and problems sleeping may indicate suffering from pain.¹ There are several tools to try to assess pain in these difficult situations. Some rely on photographs of faces or smiley cartoons to help patients describe their pain. Patients that do not speak the local language can also benefit from these tools.

PAIN IN PEDIATRIC AGE

Adressing pain in pediatric age, especially under six years old, presents challenges of communication and other problemas as children may also deny their pain or inversely be motivated to feign pain³⁸ Behavioral signs are of great deal of importance in these circunstances. Health care providers should be attentive in children's interest in surroundings, pain reliving postures, slowness of movement and wariness to being moved.³⁸ The COMFORT Pain Scale is specifically designed for infants and small children, addressing nine pain indicators: alertness; calmness or agitation; respiratory distress; crying; physical movement; muscle tone; facial tension; arterial pressure; and heart rate. These pain indicators score between one

and five and the sum of these scores can therefore range between 9 and 45. Is determined that a score between seventten and twenty-six indicates adequate sedation and proper pain control.³⁴

PAIN IN THE ELDERLY

Assessment of elderly patients, assumed as age equal or superior to 65 years of age, with chronic postoperative pain requires special attention as one third inpatients surgeries are performed in this age group.³⁰ These patients often present a challenge when it comes to pain assessment due to cognitive or language impairment. One important aspect to have in mind when assessing elderly patients is to collect their medical history and previous pain medication, since many elders already have chronic pain conditions, prior to the surgery performed. Also, it is important to use a variety of words other than just pain when assessing the pain felted by the patient. Elderly patients often refer soreness or hurting instead of the word "pain".³⁴ As to the pain intensity tools, the NRS as shown above, is very understandable and easy to use, and constitutes a valid measure in the postoperative environment with elders. Alternatives are VRS and faces pain scales that can also provide reliable information about pain severity.³⁴ Finally, behavioral manifestations, described above, assume greater importance when language or cognition are impaired.

SPECIFIC QUESTIONNAIRES

Several specific questionnaires have been developed to evaluate pain syndromes and postoperative pain following specific surgeries. Including groin hernia surgery,⁵⁷ hip surgery,³ surgery due to small bowel obstruction,⁵⁴ knee replacement surgery,^{40,41} orthopaedic surgery,⁵³ cesarean delivery³⁶ or surgery in pediatric age.³⁸ Methods designed particularly for a group of patients that underwent the same surgery allows assessing some special aspects of pain, yet are all based in the generally described CPOP assessment tools above.

QUANTITATIVE SENSORY TESTING

Some conditions are more painful than others, yet individuals suffering from the same condition do report pain in a large range of intensity. Some studies report that this variation regarding patients dealing with the same condition is far greater than the difference in painfulness across conditions.⁵⁸ This presents a well know problem when using self reporting methods in assessment of pain. Some patients may use higher ratings of pain thus receiving more appropriate treatment related to that assessment, while others with the same condition may indicate lower pain felted being and accordingly treated less intensely.

Numerous explanations are suggested: despite the same condition between individuals, the severity of the condition may differ; the cause of pain may be similar at first but pathophysiological unique to the patient leads to a different development of the condition; scaling biases as patients may differ in their interpretation of a pain rating scale.

Another hypothesis is that these variations may reflect differences in pain sensitivity, and is supported with imaging studies of the brain's activity. Different reported pain with the same stimuli is accompanied by different imaging of the brain's activity. Measuring pain sensitivity depends on the application of a stimulus such as heat, cold or pressure and then examining pain threshold and tolerance.

A large cross-sectional study was conducted in North-Norway, Tromsø Study, where experimental pain sensitivities were assessed in either chronic pain or chronic pain free patients. One important result of this study showed that chronic postoperative patients presented less pain tolerance when compared to non-pain reporting individuals, but this difference faded when compared to other patients suffering from other causes of chronic pain.⁵⁹ Chronic pain other than surgery explain tolerance variability. This study also showed that chronic pain after surgery is aggravated by the presence of comorbid pain, highlighting the importance of addressing the patient as a whole and not only surgical pain. Experimental pain sensitivity assessments require time, laboratory resources and causes pain to the patient. Others alternative methods developed such as Pain Sensitivity Questionnaire (PQS) questionnaire, which assesses pain sensitivity instructing the patient to imagine painful situations that occur in everyday life and with non-painful stimuli.⁶⁰

As studies show that patients with high experimental pain sensitivity respond less well to treatment, assessing pain sensitivity can be of great use in the context of chronic postoperative pain.^{59,60}

PAIN AND QUALITY OF LIFE INSTRUMENTS TRANSLATED INTO PORTUGUESE

In Portugal and in the Portuguese language, a study was published in 2007 by Azevedo L making the translation, cultural adaptation and validation of relevant and internationally accepted pain measuring instruments. The objective of that work was to translate, culturally adapt to the Portuguese language and to evaluate the reproducibility and validity, of the questionnaires: Brief Pain Inventory (BPI); West Haven-Yale Multidimensional Pain Inventory (WHY-MPI); Pain Disability Index (PDI); Chronic Pain Coping Inventory (CPCI); Pain Beliefs and Perceptions Inventory (PBPI); Pain Catastrophizing Scale (PCS); Douleur Neuropathique in 4 Questions (DN4). Since then these tools

are ready to use in the Portuguese population. Regarding the study of quality of life, the SF-36 was translated and validated into the Portuguese language by the Center for Studies and Research in Health of the Faculty of Economics of the University of Coimbra. The EQ-5D that allows the achievement of the essential components of health-related quality of life was also validated to the Portuguese language in 1998, based on guidelines set by the EuroQol Group.⁶¹

CONCLUSION

As chronic pain after surgery is frequent, health care providers should discuss with their patients in the perioperative context aspects related to pain, its evaluation and treatment. Assessment of pain is the ultimate foundation for the management of this condition. Appropriate evaluation of chronic postoperative pain is currently based on self-report validated tools. Assessing the pain itself by measuring only its intensity, is extremely unsuitable. Studies propose evaluation of adverse effects of therapy, previous pain medication, emotional and social well being, physical function and interference in quality of life. Also, a global assessment overall recovery should be fulfilled by the patient. It is important to determine if a neurophatic component is present in this population of patients as its presence urges a faster approach in assessing the pain. Several pain evaluation methods are available indicating that pain assessment is still a challenge, ranging from simple intensity evaluations like NRS to Brief Pain Inventory which also encompasses medication relief, temporal development of pain, a body map and pain interference with quality of life. Specific questionnaires are available concerning social and psychological components, neurophatic pain and for individuals in which language or communication is prevented. Finally, the existence of Transitional Pain Services working as a multidisciplinary team, evaluating the patient not only during his stay in Hospital but after being discharged, also plays a key role in evaluating and treatment of chronic postoperative pain. Currently, there is still lack of evidence guiding firm recommendations on which specific tools to use in the postsurgical context. Future studies should try new tools to assess pain sensitivity in connection with a functional assessment of pain.

APPENDAGE

APPENDIX 1: QUERY USED IN OUR RESEARCH

("chronic pain" [all fields] AND ("postoperative pain"[all fields] or "persistent postsurgical pain"[all fields] or "persistent postoperative pain"[all fields]) AND ("pain scales"[all fields] or "McGill Pain questionnaire"[all fields])

or “brief pain inventory”[all fields] or “measurement”[all fields] or “ assessment”[all fields] or “ pain experience”[all fields] or “ verbal rating scales” or “ numeric rating scales” or “questionnaire” or “guidelines”[all fields] or “outcome measures”[all fields] or “pain satisfaction”[all fields])) AND (“2004/01/01”[PDAT] : “2016/10/31”[PDAT])

APPENDIX 2: SELECTION STRATEGY

MINISTÉRIO DA SAÚDE. DIREÇÃO-GERAL DA SAÚDE – Norma n.º 029/2013, atualizada a 24 de abril de 2015 – Avaliação Pré-Anestésica Para Procedimentos Eletivos. [Em linha] Lisboa: Direção-Geral da Saúde, 2015. Disponível em <http://www.dgs.pt/directrizes-da-dgs/normas-e-circularesnormativas/norma-n-0292013-de-31122013.aspx>

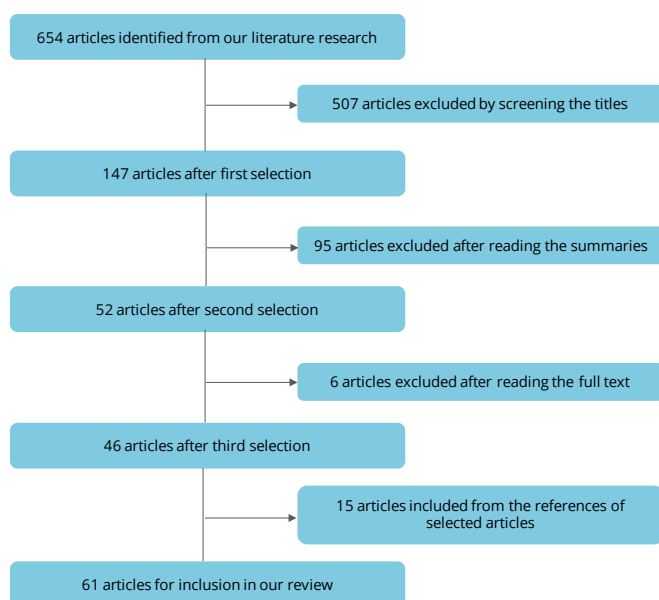


Figure 1. Selection Strategy

Conflitos de interesse: Os autores declaram não possuir conflitos de interesse.

Conflicts of interest: The authors have no conflicts of interest to declare.

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