Pain scale: implementation for patients in the immediate postoperative period of cardiac surgery

ESCALA DA DOR: IMPLANTAÇÃO PARA PACIENTES EM PÓS-OPERATÓRIO IMEDIATO DE CIRURGIA CARDÍACA

ESCALA DE DOLOR: IMPLANTACIÓN PARA PACIENTES INMEDIATAMENTE DESPUÉS DE LA CIRUGIA CARDÍACA

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ABSTRACT

A clinical intervention study was developed in a hospital specialized in cardiology in Porto Alegre, RS, Brazil, with the objective of evaluating the implementation of the pain scale in post-operative cardiac surgery patients. It was developed in four steps: pre-test on pain, training lecture for nursing staff, and, reapplication of the pre-test at 30 and 60 days. The test consisted of ten questions weighing one point each. Scores ≥7 were determined to represent satisfactory knowledge in using the pain scale. The sample consisted of 57 nursing professionals. The scores ranged from 6.12±1.65 in the pre-test to 7.73±1.05 and 8.18±0.99 after 30 and 60 days, respectively (p<0.005). Pain intensity was correlated to medication standardized by protocol. The training improved the knowledge of the team and the type of analgesia administered in relation to pain intensity.

DESCRIPTORS
Thoracic surgery
Postoperative period
Pain measurement
Nursing, team
Nursing care

RESUMO

Estudo de intervenção em serviço desenvolvido em um hospital especializado em cardiologia de Porto Alegre, RS, com o objetivo de avaliar a implementação da escala de dor para pacientes de pós-operatório de cirurgia cardíaca. Foi desenvolvido em quatro etapas: pré-teste sobre dor, treinamento com aula expositiva para a equipe de enfermagem, reaplicação do pré-teste em 30 e 60 dias. O teste continha dez questões com peso um para cada questão. Escores ≥7 foram determinantes para considerar o conhecimento satisfatório para uso da escala de dor. A amostra foi constituída por 57 profissionais de enfermagem. Os escores variaram de 6,12±1,65 no pré-teste para 7,73±1,05 e 8,18±0,99 após 30 e 60 dias, respectivamente (p<0,005). A intensidade da dor foi correlacionada à medicação padronizada pelo protocolo. O conhecimento da equipe melhorou após a capacitação, assim como o tipo de analgesia administrada em relação à intensidade da dor.

DESCRITORES
Cirurgia torácica
Período pós-operatório
Medição da dor
Equipe de enfermagem
Cuidados de enfermagem

RESUMEN

Estudio de intervención realizada en hospital especializado en cardiología, Porto Alegre, RS, Brasil, para evaluar la aplicación de escala de dolor en pacientes sometidos a cirugía cardíaca. Se ha hecho en cuatro etapas: pre-test sobre dolor, formación de conferencias para el personal de enfermería, una nueva aplicación del pre-test de treinta y sesenta días. La prueba contiene diez preguntas valiendo un punto cada. Aciertos con una puntuación ≥7 se consideraran crucial para conocimiento adecuado para la escala de usodel dolor. Muestra estuvo conformada por 57 enfermeras. La puntuación de 30 y 60 días osciló entre 6,12±1,65 a 7,73±1,05 y 8,18±0,99, respectivamente (p<0,005). La intensidad del dolor se correlacionó con el medicamento por vía protocolo estandarizado. Un mejor conocimiento del equipo después de capacitación, así como tipo de analgesia administrada en relación con intensidad del dolor.

DESCRIPTORES
Cirugía torácica
Periodo postoperatorio
Dimensión del dolor
Grupo de enfermería
Atención de enfermería

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INTRODUCTION

Despite the unquestionable advances in pain management, pain continues to be inadequately relieved in postoperative cardiac surgery, and in most cases, this is considered to be a normal experience. Furthermore, the lack of staff knowledge about the pharmacology of analgesics and their relationship to pain intensity may compromise relief[1]. Knowledge of these concepts is of fundamental importance for the understanding of pain, the methods to be used for its evaluation, and appropriate management in ensuring its control[2]. It is important to consider that pain influences neurovegetative responses and, associated with anxiety, increases heart rate, oxygen consumption and cardiac overload[3].

Patients who have pain intensity measured and systematically recorded present a considerable reduction in the picture of pain as compared to those who are not monitored. These latter tend to negatively evaluate other services, especially when there is a persistence of pain during their hospitalization[4].

Pain monitoring has a high degree of importance, such that the *Joint Commission on the Accreditation of Healthcare Organizations* (JCAHO), a North American entity that evaluates hospitals, included its relief as an item to be evaluated in hospital accreditation, beginning in 2001.This decision reinforced the patient's right to have his pain adequately measured, recorded and controlled, establishing management standards for outpatient services, home care, mental health, rehabilitation and hospital institutions[5].

In a prospective study that included 200 post-operative cardiac surgery patients, the authors identified that patients presented pain in the sternotomy region until the seventh day after cardiac surgery[6]. In another study conducted with a similar population, patients were evaluated for pain intensity and managed according to the protocol associated with a visual analogue scale[7]. The results showed better management of pain intensity when protocols used were guided by nurses[8].

The advantages of adopting analgesia control scales include the standardization of the method of assessment, registration, evolution of symptoms, and especially, the possibility of making this experience more *visible and measurable*, triggering more active behaviors in medication treatment[9].

Nurses play a fundamental role in the management of postoperative pain, and additional research that seeks to implement these strategies may contribute to clinical practice. In this perspective, this study was developed to evaluate the effectiveness of the implementation of the visual numeric pain scale in postoperative cardiac surgery patients.

This was a clinical intervention study conducted during the period of January to April of 2011, in the postoperative unit (POU) of a specialized cardiology hospital in Porto Alegre, Rio Grande do Sul. The sample consisted of nursing team members (50 technical nurses and seven nursing assistants) working in this unit on different work shifts. Professionals who were away for reasons of vacation, pregnancy, or health, as well one of the study authors, were excluded from the study.

A training program was provided shortly before the beginning of the work shift, in the Nursing Service training room, in four steps: administering a pre-test, training of staff, administering the same questionnaire 30 and 60 days afterward. The first step (pre-test) lasted thirty minutes, and a questionnaire was administered with ten objective questions about the management and classification of pain, existing scales, use of the protocol for analgesic administration, among others, to objectively evaluate the individual knowledge of each professional. The options for responding to the pre-test statements were true (T) or false (F), with with each question weighing one point, totaling a maximum of ten points. Knowledge was considered satisfactory for the use of the pain scale when scores were greater than or equal to seven.

The second step consisted of a program of theoretical and practical training for the nursing staff, with classes, dialogues and audiovisual resources, addressing the importance, understanding and utilization of the Visual Numeric Scale (VNS)[10] of pain as the fifth vital sign. This step lasted two hours and was conducted with groups of professionals. In the third and fourth steps, the same questionnaire was administered that was used in the pre-test, 30 and 60 days after training, and also lasted thirty minutes; the training program totaled five hours. Following this, the questionnaires were compared, and when every health professional reached a minimum score of 70% correct, knowledge about pain management was considered to be adequate[11].

Information concerning the measurement of pain was verified in the nursing records in the patient charts. The VNS was considered implemented when 70%[12] of the records were properly completed.

The project was approved by the Committee on Ethics and Research of the institution, under number 4519/10. All participants signed the Terms of Free and Informed consent and the researchers signed the Statement of Commitment for using the data from the patient records.

> The advantages of adopting analgesia control scales include the standardization of the method of assessment, registration, evolution of symptoms, and especially, the possibility of making this experience more visible and measurable, triggering more active behaviors in medication treatment.

Data were analyzed using the statistical program *Statistical Package for the Social Sciences for Windows*, version 18.0. Categorical variables were expressed in percentages and absolute number, and continuous variables as mean ± standard deviation or median and 25% and 75% percentiles, according to the data distribution. To assess the level of knowledge acquired by the nursing staff after training, we used analysis of variance for repeated measures. A value of $p<0.05$ was considered statistically significant.

RESULTS

We included 57 nursing professionals, the majority of whom were female (72.5%), with a mean age of 36.7±9.0. Technical nurses predominated (88.3%). These and other characteristics of the study population are presented in Table 1.

Continuous variables expressed as mean ± standard deviation. Categorical variables expressed as absolute (n) and relative (%).

Table 1 – Demographic characteristics of the nursing professionals − Porto Alegre, RS, 2011. n=57

Characteristics	nº (%)
Professional characteristics	
Technical nurses	50 (88.3)
Nursing assistants	7 (11.7)
Gender	
Feminine	41 (72.5)
Age (years)	36.7 ± 9.0
Educational level	
Completed higher education	2 (3.9)
Technical course	48 (84.3)
Time since completing education	
Up to 5 years	20 (35.3)
6 to 10 years	14 (25.5)
11 to 20 years	16 (27.6)
21 to 30 years	6 (9.9)

Note: (N=5)

Among the 88 patients undergoing cardiac surgery during the period in which the scale was implemented, 49 (55.7%) had myocardial revascularization. The ratio of analgesic prescribed and correctly used to alleviate pain was 93.9% for minimal pain, 62% for moderate, and 88.9% for severe pain. These data are demonstrated in Figure 3.
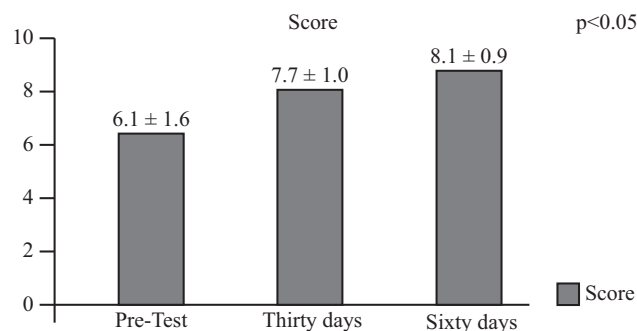

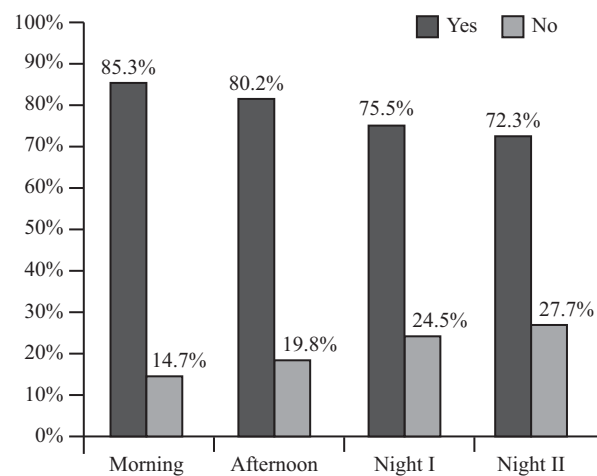**Figure 1** – Comparison of the scores in the pre-test and after 30 and 60 days. Porto Alegre, RS, 2011.

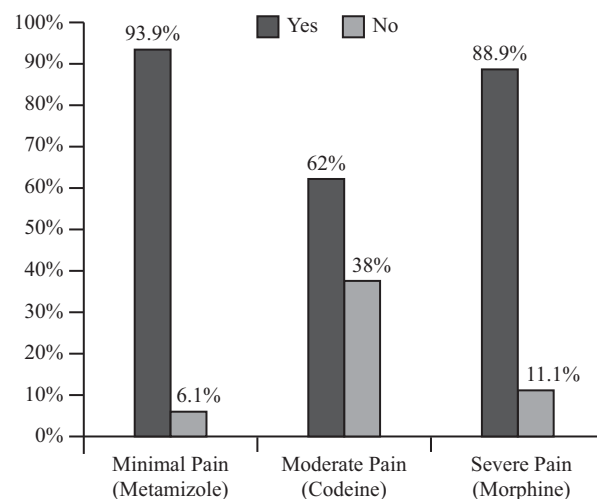**Figure 2** – Use of pain scale during different work shifts. Porto Alegre, RS, 2011.

Figure 3 – Classification of pain *versus* medication administration. Porto Alegre, RS, 2011.

DISCUSSION

This clinical intervention study sought to enable the nursing staff through the use of a tool, the visual numeric scale,

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for the detection of patient complaint of pain after cardiac surgery. This scale is described in the literature as being easy to administer, with only a 2% failure rate[10]. The utilization of a scale provides effective relief of pain based on appropriate judgment, allowing the humanization of care to the extent that it is subjectively valued and satisfies the needs of the patient. Knowing the patient, and identification of his needs, is an essential task for all nurses. Health professionals should be alert and sensitive to hidden signs. It requires a receptive attitude, willingness to listen, observe, and, above all, to be aware of the communication with the other[12]. With the adequate measurement of pain it is possible to choose which is the best and safest among the different types of available treatment.

This study about the role and importance of the nurse as an opinion leader, planner and creator of the training of the nursing staff reflects that the implementation of the scale and the knowledge for its utilization achieved the desired outcome.

A qualitative, exploratory study evaluated the perception and knowledge of health professionals (physicians, pharmacists and nurses) about pain and aspects related to the utilization of opioid medications, by means of focused interviews. The results showed that there was a need for health professionals to familiarize themselves more with the theme. Knowledge with respect to side effects was observed to be more evident among pharmacists and physicians, while nurses demonstrated dominion over the analgesia scales[13].

However, a cohort study conducted in Sweden compared two groups of patients undergoing cardiac surgery. Subjects were assessed by visual analogue scale (VAS) and medicated through the use of a pain protocol guided by nurses; others received medications conforming to the usual pain protocol. The results showed that patients medicated according to the routine of the institution presented higher pain scale scores when compared to those treated with the nurse-guided protocol, who had a significant reduction in pain, with greater comfort and safety[14].

In the results of the chart review analysis for patients who had undergone cardiac surgery (Figure 2), there was a high percentage of records. The morning shift team used the scale with a high frequency, unlike the night shift staff. The use of the scale by the nursing staff during the night 1 (75.5%) and night 2 (72.3%) periods was lower, which may be related to the much reduced number of professionals during these shifts, that hindered the charting in the patient record[15].

A retrospective study conducted in a *Veterans Health Administration* medical center initiated a national strategy to improve pain management in patients. The records of 79 patients admitted to a pain clinic were analyzed, with 300 records before and 300 after training on the implementation of the pain scale and pain management. The evaluation was done using seven process indicators in the analysis of pain management. The results showed that the quality of care in pain management remained unchanged in all seven issues analyzed before and after training, regardless of the shift evaluated[16].

Whereas medication treatment of postoperative pain is currently considered safe and easy to apply in clinical practice, and the World Health Organization (WHO) advocated analgesic treatment in three degrees according to pain intensity, the results of this study demonstrated that professional nurses were able to correlate pain intensity with medication standardized and suggested by the WHO[17]. It can be inferred, therefore, that systematic continuing education needs to be maintained as a management program, proving that the appropriation of knowledge affects behavior and improves care.

A study conducted in a Intensive Care Unit of a University Hospital in Montérégie, Canada, aimed to evaluate the implementation of a scale for patients on mechanical ventilation, *Critical Pain Observational Tool* (CPOT) among nurses. The training was developed in three steps: pre-implementation, with chart review; implementation with administration of the scale; and, post-implementation with viewing of patient care videos. The results showed that there was a high prevalence of utilization of the scale, increasing systematization of the evaluations of the nurses with the presence or persistence of pain, and reduction of analgesics / sedatives by patients in the post-implementation phase. Thus, the scale was found to be positive in the assessment of pain and patient care[18].

However, training alone does not change practice. One way to overcome this barrier is to institutionalize pain management as a management practice.

CONCLUSION

The results of this study showed that implementation of the visual numeric scale of pain was effective in this sample of patients undergoing cardiac surgery, as evidenced by improved knowledge of the team after the training, as well as the type of analgesia administered in relation to pain intensity.

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