PROFESSIONAL IMPROVEMENT IN TREATING POSTOPERATIVE PAIN FROM SCIENCE, TECHNOLOGY AND SOCIETY PERSPECTIVE

LA SUPERACIÓN DEL PROFESIONAL EN EL TRATAMIENTO DEL DOLOR POSTOPERATORIO DESDE EL ENFOQUE CIENCIA, TECNOLOGÍA Y SOCIEDAD

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Reception Date: February 24, 2025

Acceptance Date: March 27, 2025

ABSTRACT

This study is aimed to elaborate an improving strategy that integrates multidisciplinary work for taking care postoperative patients. Different variants used in postoperative pain treatment were analyzed from a science, technology, and society approach. Theoretical methods, such as historical-logical and analysis-synthesis, were used, which allowed identifying limitations in pain treatment. This strategy contributes to professional development and higher quality in healthcare services.

KEYWORDS: postoperative pain; pain management; professional development

RESUMEN

Se elaboró una estrategia de superación que integrara el trabajo multidisciplinar para la atención del paciente postoperatorio; fueron analizadas desde un enfoque de Ciencia, Tecnología y Sociedad (CTS) diferentes variantes que se utilizan en el tratamiento al dolor postoperatorio. Se utilizaron métodos del nivel teórico, como el histórico-lógico y análisis

síntesis, que permitieron constatar limitaciones en el tratamiento al dolor. Contribuye con la superación profesional y una mayor calidad en el servicio de salud.

PALABRAS CLAVE: dolor postoperatorio; tratamiento del dolor; superación profesional

INTRODUCTION

The Scientific-Technical Revolution brings continuous changes in science and technology, harnessed for social development. Their application needs education and that way to update human knowledge and skills to carry out their country development (Ramos, Barrientos & Frómeta, 2018).

In the 21st century, higher education faces demands for relevance, requiring it to contribute to economic development, to occupy an increasingly significant role in knowledge construction, all within the context of its missions in teaching, research and university extension.

The improvement and continuous development of human resources is a topic of significant interest in the field of education. Consequently, within Cuban medical education, Social Studies of Science and Technology acquire special meaning, aiming primarily to stimulate reflection on the political, economic, cultural, epistemological and ethical dimensions of scientific-technological practice, contextualized within the country in recent decades (Ramos, Barrientos & Frómeta, 2018).

Cuban medical education demands greater scientific rigor in the didactics of health professionals' development, and the enhancement of scientific-technological culture, hence, the particular significance of Social Studies of Science and Technology (Ramos, Barrientos & Frómeta, 2018).

Each time presents new problems that require the contribution of professionals with scientific thinking, possessing humanistic, ethical, and moral values, socially committed, prepared to identify, solve and develop solutions for the health problems afflicting humanity (Santana et al., 2021).

Finding solutions to unresolved health problems is increasingly important, alongside maintaining established World Health Organization (WHO) programs to avoid diseases. One way to contribute is through the continuous and standing development of health professionals (Gómez et al., 2019).

Pain is one of the most distressing symptoms in any illness, is a fundamental health problem worldwide. However, it often does not receive adequate treatment due to cultural, religious, societal attitudes of healthcare professionals' attitudes, or political and economic reasons.

Based on temporal evolution, pain is classified in chronic and acute. Acute pain is an alarm signal resulting from somatic or visceral tissue damage and usually disappears with the healing of the causal injury. However, inadequate treatment can lead to its chronicity. Chronic pain, in contrast, lacks a biological protective function and carry physical, emotional and social alterations that affect the patient's quality of life.

Postoperative pain is, currently, one of the most common care problems in hospitals, despite the available therapeutic means for its treatment. According to Ordeñana (2020), adequate control of postoperative pain reduces the incidence of complications and, consequently, hospital stays.

The predominant physical response involves avoiding any movement that might exacerbate the pain, with patients adopting immobile postures, especially during the first postoperative hours.

The psychological response is more complex and often includes fear and anguish manifestations; its intensity depends on the magnitude of the pain and the subject's baseline psychological characteristics. This leads to repercussions and complications at cardiovascular, respiratory, metabolic, urinary, musculoskeletal and digestive levels.

Besides being a source of unnecessary suffering for humanity and the ethical considerations this phenomenon implies, improper pain treatment increases mortality, a high socioeconomic cost and generates increased overall healthcare expenditure.

Several studies in recent years indicate that even when pain is treated, the treatment is often inadequate or insufficient. Ferrel, an expert in pain management, often speaks about «triple-whammy» effect: the physician prescribes less than needed, nurses administer less than prescribed and patients do not report all their pain (Martínez et al., 2015).

The lack of adequate training in pain management by healthcare staff is cause of an absence of assessment or inadequate evaluation of pain intensity, as well as suboptimal treatment of itself (Martínez et al., 2015).

Unawareness of pain pathophysiology and the pharmacokinetics and pharmacodynamics of analgesics is, in many cases, the cause of inappropriate treatment, along with the opinion held by many health professionals that pain should be endured as much as possible.

Inadequate preparation and erroneous concepts about postoperative pain treatment among healthcare staff are some of the most valued aspects needing improvement for effective treatment. Education and training of medical and nursing staff in pain assessment can reduce it from severe to moderate (Velázquez et al., 2012).

In studies carried by Aguilar et al. (2018), the different guidelines for pharmacological treatment of acute postoperative pain, as well as the ways and administration methods (analgesic treatments) used in hospitals in Spain, are described through a retrospective, descriptive and observational study of the pharmacological treatment guidelines for acute postoperative pain used in hospitals distributed throughout Spain; and one of their indicators in the surveys made was the training of health professionals for adequate pain management.

In summary, strongly ingrained erroneous attitudes among health professionals, such as «on-demand» guidelines, resistance to use opioids and underestimation of the pain suffered by patients, are the main causes of inadequate postoperative pain control. Therefore, a health problem persists, not precisely due to lack of resources, but because of the absence of an efficient organization of services that guarantees the quality of care and reduces the suffering of those who trust their doctors (Velázquez et al., 2012).

Hence, the need of teaching health personnel through postgraduate training, that from their respective positions be able to contribute to this health and wellness objective for population. Based on documentary review, surveys and interviews applied to health professionals linked to the researched topic, the following shortcomings were identified:

- Insufficient knowledge of techniques, tools and necessary actions to consider in postoperative pain treatment.
- A lack of multidisciplinary integration adequately addressing pain treatment.
- Short of actions from postgraduate training regarding the treatment and management of postoperative pain.

In relation to the above, the research problem is posed: How to contribute to the improvement of postgraduate training in health professionals regarding to the comprehensive treatment of postoperative pain?

Consequently, the research objective is declared: to develop a professional development strategy for the comprehensive treatment of postoperative pain, contributing to better patient recovery quality.

DEVELOPMENT

Technology advance in recent years and the consumption of internet and mobile devices among the population is a fact, and their utility as tools for communication with patient, increasing patient motivation, and for autonomous and dynamic monitoring of any intervention, is evidently becoming gradually established.

Consequently, the application of these devices in the health field undoubtedly is one of the poles of economic and social development today, and is object of publication in several scientific journals (Failde, 2019). On the other hand, virtual and augmented reality are highly useful for distracting patients from pain and anxiety (Lirio & Ferri, 2023).

The application of virtual reality as an analgesic has been object of numerous studies and experiments using headsets or glasses that immerse the patient in virtual environments specifically designed to relieve pain (Lirio & Ferri, 2023).

Regarding mobile applications for pain monitoring, these are tools that allow users to record and track their pain level over time. Most commonly, they use scales for users to indicate the intensity of pain they experience.

Furthermore, some applications also allow recording additional information, such as the location of pain, triggering factors and relief strategies used (Lirio & Ferri, 2023).

The growth of mobile applications for handling pain disorders, such as migraine, back pain, and fibromyalgia, has been tremendously rapid, and currently, there are all kinds of Digital Medicine interventions. Regarding specific techniques, they include home exercise program applications, online education about pain and others (Bañuelos, 2022).

Artificial Intelligence (AI) has begun to play a crucial role in many areas of medicine, and management of postoperative pain is no an exception. The incorporation of AI into this process has opened new possibilities and approaches that are improving the way this clinical challenge is addressed.

One of the most significant advances has been AI's ability to predict and personalize pain management. By analyzing previous patient data, including medical histories, medications, previous surgeries and other relevant factors, AI systems can now predict with considerable accuracy how much pain a patient is likely to experience after an operation.

This allows doctors to personalize analgesic treatment regimens, ensuring patients receive the appropriate dose at the right time, thus avoiding overmedication or insufficient pain relief (Bustamante & Correa, 2023). Furthermore, AI-equipped monitoring devices are emerging as valuable tools for tracking pain progression in real-time. These devices can assess vital signs and other indicators to determine a patient's pain level and automatically adjust the administration of analgesics as needed (Bustamante & Correa, 2023).

Neural networks, particularly deep neural networks, are also finding application in this field. These networks are capable of identifying complex patterns in large datasets, which can be particularly useful for understanding individual variations in pain perception and management (Bustamante & Correa, 2023).

Biomedical technologies are evolving healthcare worldwide; the preventive, prognostic and therapeutic vision of diseases is changing rapidly. Cuba is not unfamiliar to this revolution, which imposes greater rigor in the process of continuous and permanent training and development of human capital, requiring the increase, systematization and socialization of the scientific and intellectual production of researchers, and showing professional performance up to this times, reflected in a higher quality of life of population.

With the increasing deficit of medications, including analgesics, joined with the lack of knowledge about adequate pain treatment among health personnel and poor patient communication, time and adequate treatment of pain is prolonged. This allows the pain to become intolerable and resistant to usual analgesia, a fact observable from Primary Care in clinics to hospital centers themselves, being resistant to the prevention of pain that would later spare the need for aggressive treatment for pain that will clearly appear.

In 21st century, despite the achieved cultural and technological development, social contradictions are observed, with cultural stigmas associated to endure, treating or not the pain, accompanied by insensitivity to others' pain, when there should actually be a high level of knowledge and health education, leading to the emergence of fear and poor cooperation from patients.

MATERIALS AND METHODS

Theoretical level methods:

Analysis-Synthesis: Used in analyzing sources providing the theoretical foundations of the research, interpreting the results from the initial diagnosis, elaborating and justifying the assumed strategy for professional development and determining partial and general conclusions.

Historical-Logical: Used to characterize the object of research by determining the main trends and regularities in its historical development.

Induction-Deduction: Considered for the study of documents, research reports and consulted bibliographic sources.

Empirical level methods:

Observation: Used for determining the scientific problem, characterizing the current state of the researched field and verifying the main results obtained from this research.

Survey: Used for determining the current state of the scientific problem, characterizing the process of continuous development of health professionals, and for verifying the main results of the research.

Interviews: apply to specialists and other health professionals to identify existing problems regarding professional development and the particularities of postoperative pain treatment.

For the development of the research, health professionals were taken as the population.

The sample was selected intentionally from health professionals who deal with the topic of pain, from a population of 100 health professionals, a sample of 35 health professionals was chosen.

PROFESSIONAL DEVELOPMENT STRATEGY ON POSTOPERATIVE PAIN TREATMENT

The proposed development strategy identifies all health professionals as the base component, to execute the necessary actions that will cause future transformations in the existing situation, regarding pain prevention, and its adequate treatment. To achieve this, a process with the necessary quality and effectiveness must be developed, whose scope involves all specialties, since patients from any specialty can experience pain or undergo surgery.

In this sense, alternatives that enable professional development should be sought, aiming at improving the performance of these specialists who provide comprehensive care to patients.

This means, then, that integrated and staggered postgraduate forms should be used, allowing the professional to go from knowing to knowing-how, to solve the demand for analgesia in a patient with postoperative pain.

The strategy is conceived in four stages (diagnosis, planning, execution and evaluation) that foster the development of workshops enabling better multidisciplinary performance in postoperative pain treatment, based on dynamic activities focused on the patient to provide better treatment for postoperative pain.

Stage I. Diagnosis

Objective: To characterize the current state regarding development needs in postoperative pain treatment.

- To diagnose the development needs expressed by specialists regarding postoperative pain treatment topics.
- To diagnose the level of knowledge possessed by participants in development activities related to postoperative pain treatment.
- To determine the development actions to be implemented based on multidisciplinary work.
- To identify the topics to be addressed, contents, methods, means to be used, responsible persons, and the actions in which each specialist will participate. 2nd stage.

Stage II. Planning

Objective: To organize development activities for specialists in postoperative pain treatment, according to the different organizational forms of postgraduate education.

- To plan the actions to be developed by the team of specialists with the Health Center and Primary Health Care (PHC) regarding the prevention and treatment of post-surgical pain through workshops.

- To determine the contents related to the topic, in the undergraduate teaching-learning process and its continuity through postgraduate courses.

- Selection of organizational forms of the development process to be carried out to address the contents: course, workshop, specialized conferences, discussion of postoperative case problems and self-preparation.

- Identification of material and human resources to be used for the implementation of the development strategy, among which ICTs stand out.

- Didactic structuring of the organizational forms.

- Elaboration of work schedule for the execution of educational actions.

In this stage, activities to be developed with primary healthcare doctors on topics related to postoperative pain treatment for their professional development are organized and planned.

Furthermore, the material resources to be used in the different teaching forms are organized and the schedules for the different activities are planned.

Stage III. Execution

Objective: To execute the selected organizational forms for the development of specialists, based on their performance in the care area.

- Development of the actions in each planned workshop.

- To systematize the acquired knowledge from multidisciplinary and coordinated work of the involved specialists in the actions to be developed.

- Preparation of teachers participating in the execution of the strategy.
- Execution of the work schedule.
- Execution of organizational forms defined as development process.
- Execution of the systematic evaluation system for each organizational form of the continuous and permanent training process for specialists.

In this stage, it is important that the modalities to be developed are flexible according to contextual conditions, face-to-face, blended and also incorporating ICTs.

Teaching methods are used that develop in the participant the skills that allow them learning to learn, learning by working, combining theory with practice, through the use of case study methods and the analysis of experiences through teamwork.

Stage IV. Evaluation

Objective: To assess the results of the executed development process for the improvement of the professional performance of specialists on the postoperative pain treatment team.

Actions for this stage:

- Evaluation of the professional performance of specialists in postoperative pain treatment.
- Evaluation of the development forms carried out.
- Monitoring the development of the professional development strategy.

The provisions of the Postgraduate Resolution regarding the participant evaluation system is taken into account, which is carried out by checking their objectives during its execution obtaining individual and collective assessments in partial and final stages, through the application of surveys and interviews to know professional satisfaction, as well as deficiencies.

Workshops on Postoperative Pain Treatment

WORKSHOP 1: What is Acute Postoperative Pain (APP)?

Objective: To identify what acute postoperative pain is, its pathophysiology and its clinical relevance.

Content:

- Definition of APP.
- Clinical characteristics: rapid onset, variable intensity, lasts from a few days to weeks.
- Pathophysiology: nociceptor activation, prostaglandin release, peripheral and central sensitization.
- Difference between acute and chronic pain.
- Impact of APP on postoperative evolution.

Activities:

1. Brainstorming (10 min)

   Trigger question: What do you understand by acute postoperative pain?

   Keywords are written on the board.

2. Interactive mini-lecture (15 min): on APP.

   Teaching aids: Exposition with visual support (slides or posters).

3. Clinical case analysis (20 min)

   Patient: 45-year-old woman who underwent hysterectomy with intense untreated pain.

   Group discussion on clinical implications.

4. Collective conclusion (15 min)

   Question: Why is it important to recognize and treat APP on timer?

Materials and teaching aids:

Poster with definition.

Pathophysiology of pain diagram.

Printed clinical case sheet.

Evaluation: Through questions and debate on analyzed content.

Responsible: Anesthesia Specialist, multidisciplinary health team.

Time:1 hour

WORKSHOP 2: Immediate and Late Complications of Postoperative Pain

Objective: To recognize the clinical consequences of poor APP management.

Content:

- Immediate complications: Physiological: tachycardia, hypertension, dyspnea, urinary retention.
- Psychological: anxiety, fear, insomnia.
- Late complications: Chronic postoperative pain.
- Depression, immobility, opioid dependence.
- Impact on recovery and quality of life.

Activities:

1. Simulated video (5 min)

   Projection of a clinical scene with a patient with uncontrolled pain.

2. Guided discussion (15 min)

   Identification of possible complications.

3. Mind map (25 min)

In groups, elaborate map with causes and consequences of untreated APP.

4. Solution wheel (15 min)

Dynamic where each group proposes preventive actions.

Materials:

Flip chart paper and markers.

Mind map template.

Evaluation: Through questions and debate on analyzed content.

Responsible: Anesthesia Specialist, multidisciplinary health team.

Time:1 hour

WORKSHOP 3: Pharmacological Management of APP -- Opioids as first line?

Objective: To analyze the medications used for APP and the role of opioids.

Content:

- NSAIDs (ibuprofen, ketorolac), paracetamol, metamizole.
- Opioids: morphine, tramadol, fentanyl.
- Co-analgesics: gabapentin, pregabalin, antidepressants.
- Risks of opioid use: tolerance, dependence, adverse effects.
- WHO analgesic ladder.

Activities:

1. Initial anonymous survey (5 min)

Commonly used drugs and clinical decisions.

2. Brief lecture (15 min)

Drug comparison: doses, effects, contraindications.

3. Role-playing (30 min)

Various clinical cases with comorbidities.

Therapeutic decision and justification by group.

4. Structured debate (15 min)

Topic: Would you use opioids as a first option? Arguments for and against.

Materials:

Comparative table of medications.

Clinical case cards.

Evaluation: Through questions and debate on analyzed content.

Responsible: Anesthesia Specialist, multidisciplinary health team.

Time:1.5 hours

WORKSHOP 4: Wait for Pain or Prevent It?

Objective: To reflect on the importance of initiating analgesia before pain appears.

Content:

- Concept of preemptive or preventive analgesia.
- Clinical evidence: better control, fewer opioids, greater satisfaction.
- Techniques: pre-incisional blocks, preoperative NSAIDs or paracetamol.

Activities:

1. Guided reading (10 min)

2. Short article comparing preventive vs. reactive analgesia.

Group simulation (30 min)

Planning perioperative analgesia for inguinal hernia surgery.

3. Proposal exposition (15 min)

Each group presents its strategy.

Materials:

Example of a real preemptive analgesia protocol.

Whiteboards or paper for diagrams.

Evaluation: Through questions and debate on analyzed content.

Responsible: Anesthesia Specialist, multidisciplinary health team.

Time:1 hour

Additional workshops are also conducted for the comprehensive management of postoperative pain, aiming to provide patients with physical, emotional and psychological tools to face and overcome postoperative pain, fostering active recovery and integral well-being.

The proposal contributes to strengthening multidisciplinary work, allows reflection on professional practice, not only based on follow-up in health consultations regarding postoperative pain treatment but also by promoting educational actions to minimize risk factors and responsible action in health care.

It fosters the strengthening of the interaction process of professionals from the hospital center, primary health care (PHC) and patients in postoperative care, promoting empathy and health education.

CONCLUSIONS

Pain can be considered the most important health concern in the world. Most patients continue to receive analgesic treatment that does not reflect the advances of recent decades; this leads to unjustified suffering and implies an increased risk of complications, as well as increased morbidity. Hence, the proposed strategy allows a better multidisciplinary performance in the treatment of postoperative pain, based on dynamic activities focused on patient to provide better treatment for postoperative pain.

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