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A SYSTEMATIC REVIEW ON ADDRESSING THE EFFECTIVE CARE FOR ACUTE PAIN IN ADULT MEDICAL INPATIENTS ON MEDICAL WARDS

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ABSTRACT

Objective. The purpose of this work is to give a systematic review of the research on the best methods for treating severe pain in hospitalized patients. **Background:** The value of effective pain management in perioperative settings in improving patients' ability to cope with and recover from acute diseases cannot be emphasized. The VA/DoD Clinical Practice Guidelines for the management of acute post-operative pain have been extensively embraced even though many of their recommendations are based on expert consensus rather than scientific facts. **Methods:** From January 2019 through April 2022, we searched Medline, PubMed Clinical Queries, and the Cochrane Database for systematic studies on the assessment and management of acute pain in inpatients, including those with poor self-report or pharmaceutical reliance. To better understand the effects of patient-controlled analgesia (PCA) for nonsurgical pain, we conducted a systematic literature analysis of trials addressing assessment timing and frequency. Two researchers analyzed the available literature critically and wrote narrative summaries to answer the research questions. **Conclusions:** Hospitalized patients frequently experience excruciating pain. The evaluation and treatment of pain in this situation are best governed by clinical studies.

Key words: acute pain, Adult patient, patient-controlled analgesia, Medical wards.

1. INTRODUCTION

In most cases, the discomfort felt after surgery is a natural and expected response to the damage done to the body during the operation. It's a protective mechanism that helps the body heal by limiting actions that could cause more tissue damage. Restoration of injured tissue begins with the underlying inflammatory immune response.

Up to 80% of those surveyed in the USA, UK, Netherlands, France, and Germany reported experiencing postoperative pain after surgery. In these investigations, most participants reported feeling severe to extremely severe pain. Patients who have great pain after surgery are more likely to be dissatisfied with their care, delay their ability to walk, experience cardiac and pulmonary complications, and, in the most extreme situations, die as a result of their injuries. Furthermore, it has been observed that anywhere from 10% to 50% of people experience severe discomfort for an extended period after surgery.

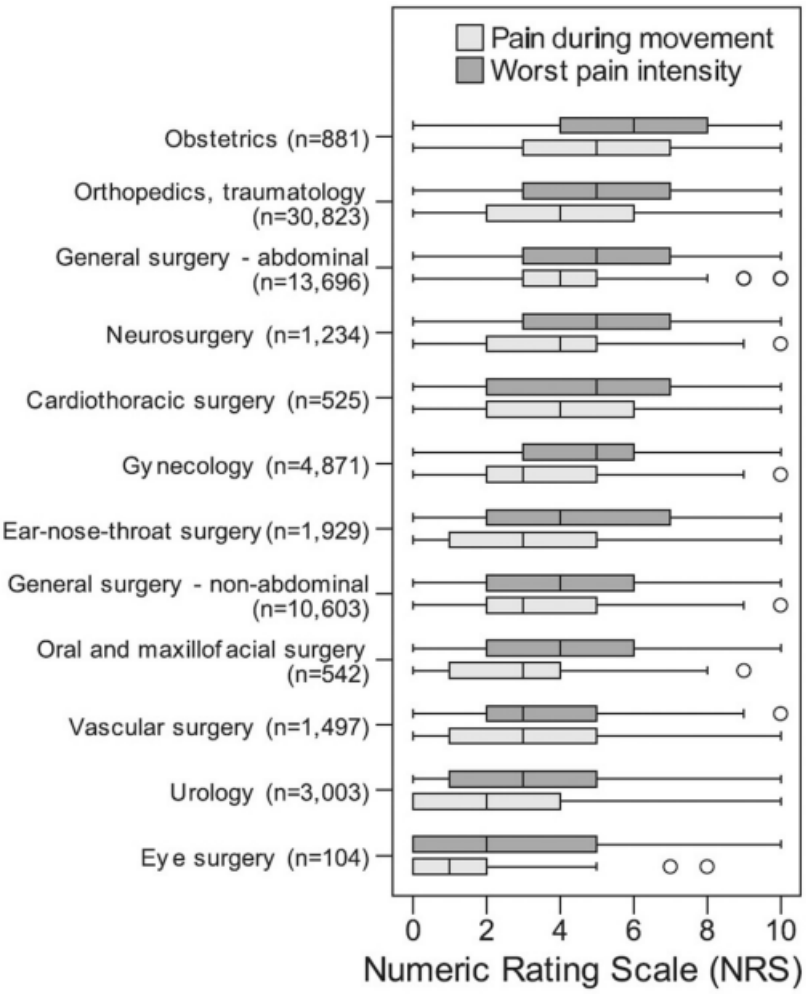

Figure 1. Pain levels in a numerical range from 0 to 10 as reported by the patient on the first postoperative day.

Some of the "biggest" surgical operations, like appendectomy, cholecystectomy, hemorrhoidectomy, and tonsillectomy, are associated with some of the highest pain scores (see Figure 1). Surprisingly high levels of postoperative discomfort were reported by the authors, who recommended continual monitoring of patients undergoing light and medium operations like laparoscopic inspections. Intense pain that persists beyond the intended duration after outpatient surgery is a major factor in hospital readmission, according to an Italian study [1].

2. REVIEW OF LITERATURE

2.1 Background

The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated to actual or potential tissue damage" [2]. Ten percent of the global population experiences chronic pain every year, and another twenty percent will experience it at some point in their life. It has deleterious effects on one's mental and social

well-being and, by extension, on one's quality of life. It also has real, monetary consequences, as evidenced by studies showing lost production due to employee absenteeism and poor job performance [3].

Up to 84% of people who seek medical attention report experiencing acute discomfort [4]. Acute discomfort develops rapidly and often subsides within a few weeks. It's usually caused by something external, such as a disease or accident, however, iatrogenic cases do exist [5].

Acute pain can be treated with either pharmaceutical (analgesics) or nonpharmaceutical (interventions). Opioids are commonly recommended among analgesics [6]. Although this method has shown success in the clinic, it does come with several drawbacks. Hyperalgesia, tolerance, and dependency are among the most well-known negative outcomes of opioid use. Intrathecal infusion-delivered analgesics, for example, require intrusive procedures that are not without their clinical risks and adverse effects. Nonpharmacologic methods (such as transcutaneous electrical nerve stimulation or applying a hot or cold compress) for controlling acute pain have also been questioned regarding their efficacy and suitability [7].

2.2 Effective care for acute pain and their guidelines to improve the safety of patients

World Health Organization (WHO) guidelines are meant to serve as a resource for decision-making, with an emphasis on the idea that various therapies and methods are available. Any document drafted by the World Health Organization that advises on how to improve health care delivery or public policy is considered a WHO guideline. A guideline's recommendation is advice given to the guideline's intended user about what that user should or should do in a given situation to maximize individual or population health. It presents options for interventions or measures that can improve health and explains how those options might affect the allocation of resources. The recommendations in a guideline are meant to help the reader decide whether or not they should implement certain public health measures, such as a certain intervention or clinical test, and when they should apply those actions. Users can also benefit from recommendations when it comes to selecting and prioritizing interventions from a given set [8].

The U.S. Institute of Medicine (IOM) defines guidelines as "statements that include recommendations, intended to optimize patient care, that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options" [9], placing a greater emphasis on clinical practice. As this definition makes clear, a guideline is built upon a thorough examination of the relevant scientific literature regarding a particular clinical issue. Clinical recommendations are made according to the quality of the evidence available. In these, the pros and cons of various treatment options are weighed, and recommendations for optimal patient care are made.

According to the IOM, "clinical practice guidelines are statements that include recommendations intended to optimize patient care that is informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options" [10]. The

United States Agency for Healthcare Research and Quality's National Guideline Clearinghouse (NGC) uses the same terminology (AHRQ).

Guidelines created by the British National Institute for Health and Care Excellence (NICE) are grounded in a thorough analysis of the available research. It states: "NICE guidelines make evidence-based recommendations on a wide range of topics, from preventing and managing specific conditions, improving health, and managing medicines in different settings, to providing social care and support to adults and children, safe staffing, and planning broader services and interventions to improve the health of communities" [11].

Similar to NICE, the Italian National Center for Clinical Excellence (CNEC), which oversees the National Guidelines System (SNLG), defines guidelines as "recommendations based on the best available scientific evidence."

According to the most recent research on healthcare quality improvement [12] conducted by the European Observatory on Health Systems and Policies, clinical recommendations focus on the optimal treatment of individuals with individual healthcare conditions. Given the nature of medicine as applied science, it can be viewed as a resource for informing care delivery, particularly in the realm of clinical aspects. The quality of patient outcomes can be enhanced by the optimization of the delivery of care by employing a well-developed and effectively implemented guideline [13]. Clinical recommendations have the potential to eliminate unjustified practice variance and promote the translation of research into practice.

International accreditation organizations like Joint Commission International recognize the importance of guidelines that enable healthcare institutions in improving performance and results to achieve the objective of safe and high-quality care [14]. (JCI). The Journal of Clinical Investigation (JCI) believes that clinical practice guidelines are a crucial part of providing evidence-based medicine and help doctors provide better, safer treatment for their patients. These standards, required for all JCI-accredited programs, will function at their best if they are both thoroughly refined and widely implemented in clinical practice.

3. CRITERIA FOR INCLUSION/EXCLUSION OF STUDIES IN THE REVIEW

Process for Selecting Studies: The Key Questions and PICOTS [15] from the AHRQ Methods Guide will be used to assess whether or not an abstract is accepted. All abstracts that have been deemed ineligible for inclusion will undergo a second round of review to double-check their exclusion. All references that at least one reviewer thinks should be included will be gathered. Two members of the team will examine each article's complete text to determine whether or not it meets the criteria for inclusion; this includes articles recommended by peer reviewers and those that surface as a result of public posting. Consensus decision-making will be used to settle any disputes.

Opioids, often regarded as the most effective analgesics, are often prescribed for severe pain. As a result, the present opioid crisis needs to be taken into account while thinking about acute pain management. The opioid analgesic prescription rate and the number of people diagnosed with opioid use disorder both increased dramatically between 1999 and 2010. There were roughly 17,000 opioid-related deaths in the United States in 2017 [16] due to the misuse of prescription opioids. The focus of legislative initiatives has shifted from chronic pain management through opioids to acute pain via opioids. To temporarily alleviate severe pain, newer studies [17] suggest there may be a dose- and duration-response link between the development of a chronic reliance on opioids. Opioids may not always be more effective than nonopioid therapy for acute pain problems and their usage may hinder recovery and performance, according to some studies [18]. A significant portion of the opioids given for surgical and other acute pain disorders are never used, making them vulnerable to diversion and abuse. While the 2016 CDC guideline mostly addressed chronic pain, it did suggest that opioids be taken for acute pain for no longer than 3–7 days at a time.

4. CONCEPT OF PAIN

Effective pain recognition, quantification, and mitigation depend on having a clear conceptualization of pain and related terminology. It is notoriously difficult to put a precise definition on the experience of pain. This is due to the complex nature of pain, which is assumed to involve sensory, cognitive, and emotional components [19] and to have varying effects on different people. According to the International Association for the Study of Pain Subcommittee on Taxonomy [20], pain is "an unpleasant sensory and emotional experience associated with real or potential tissue injury." However, in recent years, a more complex definition has been the norm. Pain is defined as an unpleasant sensory and emotional experience that is linked to or described in terms of real or probable tissue damage [21] by the International Association for the Study of Pain Subcommittee on Taxonomy. Pain, as the author sees it, is the subjective experience of neuronal impulses elicited by a stimulus with the potential to destroy body tissues. Pain, then, is the body's protective response to anything that could be harmful to its normal equilibrium if left unchecked.

4.1 Pain Pathway

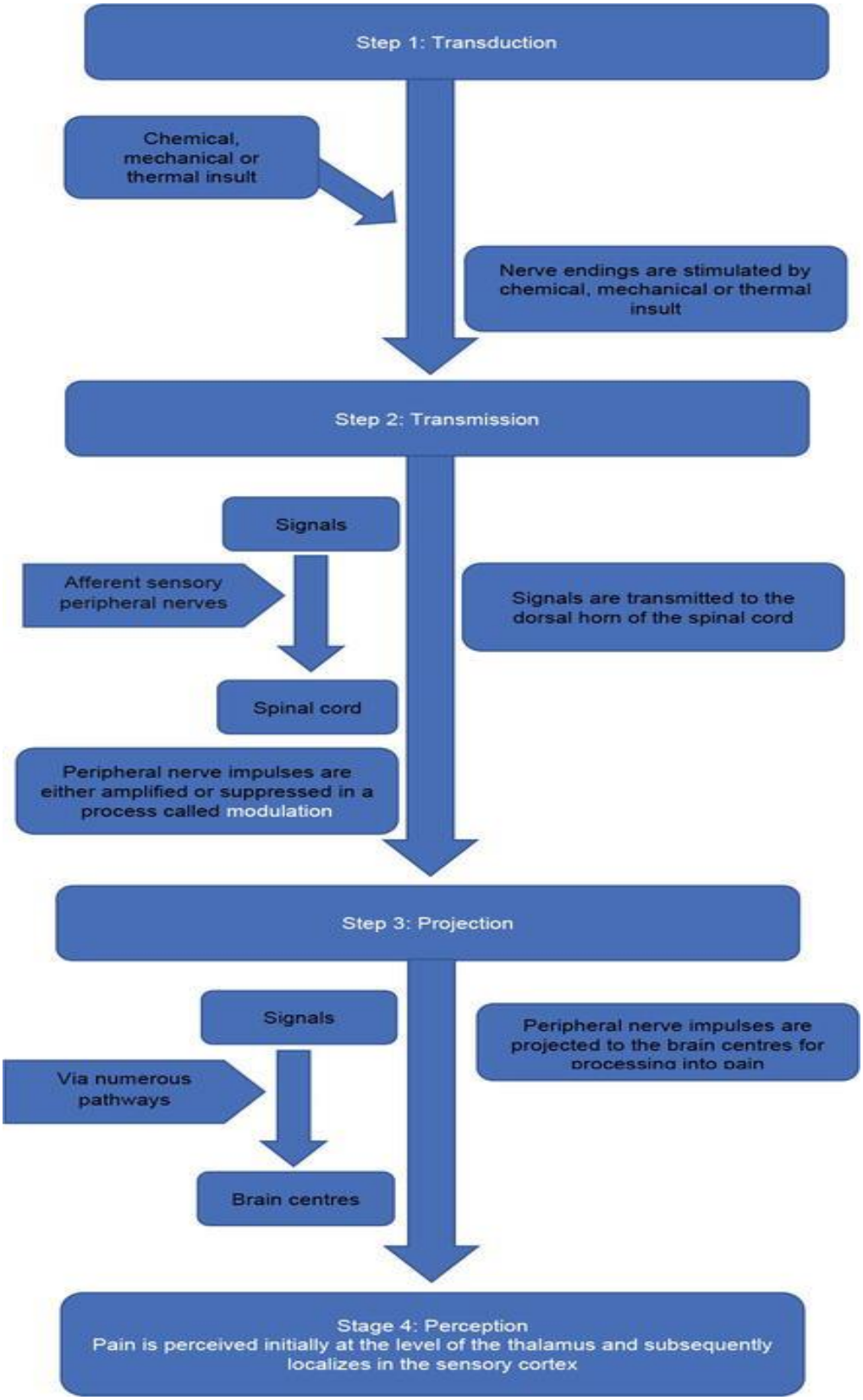

Figure 2: A flowchart that shows how pain gets from the place where tissue is hurt to the place where it is felt.

As can be seen in Figure 2, there are four main phases that make up the pain pathway, all of which work together to create the awareness or experience of pain: transduction, transmission, projection, and perception. The dorsal horn of the spinal cord receives pain signals from the periphery via the afferent sensory nerves when the body is damaged chemically, mechanically, or thermally. Afferent sensory nerves' cell bodies are located in the spinal cord, despite their peripheral location. It comes in two main varieties: myelinated A-delta fibers and unmyelinated C fibers. Myelinated a-delta fibers are notoriously rapid and densely packed, while unmyelinated c-fibers are sluggish and widely spaced. In a process known as modulation, the resultant impulses from the peripheral nervous system are altered in strength or suppressed.

4.2 Pain management

Pain can be treated with both pharmaceuticals and other methods. Opioids, NSAIDs, NSAIDs, and steroidal analgesics, as well as local anesthetics, are all used to alleviate pain. Analgesic additives can include antiepileptic medications (such as topical capsaicin, mexiletine, and N-methyl-d-aspartate receptor antagonists), serotonin-norepinephrine reuptake inhibitors, calcium channel 2-ligands, topicals, anticonvulsants, and transdermal compounds [22].

4.3 Drug factor

Several criteria, such as efficiency and cost, patient reaction, and physician choice, should be taken into account when selecting a pharmacologic agent for pain management. Combinations of medications from different classes are frequently used to achieve the best possible pain relief. For instance, the effectiveness of pain management depends on factors such as the type of drug used, the dosage, the route of administration, the possible side effects, the length of treatment, and the consistency with which treatment is administered. Suboptimal dosing, sloppy administration, and inconsistent dosing schedules are common causes of inadequate pain treatment.

By combining different types of analgesics, rather than relying on just one, multimodal analgesia reduces the risk of adverse reactions to the analgesics and provides more stable pain relief [23]. Although complicated, benefits like as potent and efficient analgesia and the potential for reduced doses of individual medicines are often emphasized [24]. However, they might provide a challenge to efficient pain management if they are utilized incorrectly.

Table 1. Summary of studies for the utility of virtual reality in acute pain

Study	**Score (out of 10)**	**Measurement tools**	**Results**
Chad et al [25]	9	McMurtry children's fear	As shown by the mean (2.18; P=.05), parents reported significantly less fear after

		scale	experiencing VRa.
Chau et al [26]	8	FLACC[e] (scale of 0-10)	The Median FLACC-VR score was 2.5 (1-5.5), and the range was (1-8). Sixty-four percent (9/14) of caregivers who tried virtual reality said they like it and would do so again. In this next trial, we did not compare the two groups. Parents' reports of lessened discomfort provide descriptive evidence.
Frey et al [27]	9	VNS[f] (scale of 0-10)	With VR, participants experienced considerably less pain at their worst compared to the control group (-1.5 (95% CI, -0.8 to -2.2)). Differences in pain scores between the VR and non-VR groups were statistically significant, as determined by an analysis of variance.
Gerceker et al [28]	10	Wong-Baker FACES (scale of 0-10)	The patients and their parents reported considerably reduced distress when using VR compared to the control group (VR: mean 1.5, SD 0.2; control: mean 5.1, SD 0.4; P.01) (VR: mean 1.5, SD 0.2; control: mean 4.7, SD 0.4; P.01).
Glennon et al [29]	9	NPS[j] (scale of 0-10)	There was no significant improvement in the VR group for either pain or anxiety compared to the control group (mean 3.9, SD 2.3). (average = 4, standard deviation = 2.7) Lack of available power source. The accuracy of the pain assessments may have been influenced by the fact that the individuals were drawn from a population with some experience with bone marrow biopsies.
Gold et al [30]	9	VAS (scale of 0-10); CAS[k]; FACES	The VR group reported significantly less pain than the control group (mean 1.31, SD 1.59). (P .05). (Mean = 1.93, Standard

			Deviation = 2.22
McSherry et al [31]	7	VNS; opioid administration	While compared to non-VR treatment, total opioid administration was lower when using VR (VR: 91.7 SD 10.1; non-VR: 103.1 SD 16.1 g/kg; P.05). Virtual reality treatment reduced opioid consumption by 39 percent. Pain scores before and after treatment showed that the VR group saw a lesser reduction in pain than the control group (mean difference -1.2, SD 2.9, P>.05) (mean difference –0.3, SD 1.7).
Mosso-Vasquez et al [32]	7	VAS	Patients in the group using the head-mounted display reported significantly less pain (6.06 before surgery, 1.73 after) compared to those in the mobile group, with a P value of.01 (3.78 before surgery, 0.64 after). When comparing pain reduction from intra- to postoperative states, the VR group employing a head-mounted display had a considerably greater effect (-1.5 versus -0.07; P=.02).
Piskorz et al [33]	8	VAS	Patients who used VR reported much less pain (mean 15.16, SD 20.51) than those who didn't (P .02). (37.05 SD 30.66). A statistically significant reduction in pain (59%, Cohen's d= 0.86) was seen in the VR group when compared to the control group.
Shoorab et al [34]	9	VNS	Those who used VR during their episiotomy repair reported much less pain (f=88.6, df=1, P.01) than those who did not. The majority of the treatment, including hymen repair (VR: mean 9.0, SD 12.6; non-VR: mean 23.6, SD 19.8) and skin repair (VR: mean 16.7, SD 16.5; non-VR: mean 39.3, SD 22.5), resulted in considerably

			lower pain ratings in the VR group compared to the non-VR group (VR: mean 6.0, SD 12.8; non- VR: mean 25.2, SD 14).
Tashjian et al [35]	9	VNS	By a statistically significant margin, those in the VR group reported significantly less pain than those in the control group (12.2% reduction vs. 24.0%, P.01) (preinter- vention: mean 5.4 SD 2.6; postintervention: mean 4.8 SD 2.7). Patients who reported improvement in VR were more likely to have improvement than control patients (65% vs 40%, P.01) (pain reduction of 0.5 standard deviations or more).

CONCLUSION

Through an examination of the efficacy of VR therapy in reducing acute pain and procedural anxiety in an inpatient setting, this review paper aims to contribute new knowledge to the field. It is crucial to take into account not just the patient's physical symptoms but also their mental and emotional well-being, as well as their connections with others while assessing and treating their pain. While suffering is typically thought of as an individual experience, it often requires sharing with others to be alleviated. As dementia progresses, it becomes increasingly difficult for patients and caregivers to communicate effectively about pain due to the increasing importance of non-verbal communication ('observational pain cues'). In addition to the outside world, communication takes place within the hospital itself, within contexts and routines that are structured primarily around the needs of the institution rather than those of individual patients. Information about a patient's pain for pain management must be generated and constructed by a team of persons engaging at various times. This team's timing and pattern of interaction with the patient are influenced by their prior knowledge of the patient's medical condition and expectations about probable pain, both of which influence how pain is identified and documented and what is expected and done about it. It is not a simple, centralized task to evaluate and treat pain; rather, it involves a web of interconnected, dynamic, and dynamically interconnected systems that often work in a manner It's possible that this level of complexity is to blame for the underutilization of relatively straightforward methods for gauging pain in dementia patients. Future decision support interventions within a person-centered care framework will need to account for this complexity by reorganizing time frames and the quality of patient communication, normalizing a broader range of pain management interventions, and creating tools that bring together information to provide a "picture of a patient's pain" that can be understood by all involved.

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