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Using Non-Pharmacological Treatments in the Emergency Department to Treat Pain Complaints: A Literature Review

I Wayan Edi Sanjana[1]*, Ni Luh Putu Inca Buntari Agustini[1], Ni Made Dewi Wahyunadi[1], I Nyoman Arya Maha Putra[1], Sri Dewi Megayanti[1], Ni Made Ayu Sukma Widyandari[2], Ida Ayu Manik Damayanti[1]

[1)]Bachelor Nursing Study Program, Faculty of Health, Institute of Technology and Health Bali, Bali, Indonesia

[2)]Bachelor Nursing Study Program, Faculty of Health, Institute of Technology and Health Bintang Persada, Bali, Indonesia

Correspondent Author:
I Wayan Edi Sanjana

Email :
edi.sanjana94@gmail.com

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Abstract

Pain management in the Emergency Department (ED) is crucial for humanitarian reasons and is associated with significant morbidity. Previously, pharmacologic therapies like acetaminophen, opioids, and NSAIDs were used, but they carry risks of side effects. Non-pharmacological interventions are often used in conjunction with pharmaceutical therapies to improve pain management and reduce opioid use. This study's purpose was to describe the non-pharmacological interventions that nurses can provide in addressing pain experienced by patients in the ED. This is a literature study from several databases such as Science Direct, ProQuest, SpringerLink, and PubMed using keywords combined with Boolean. The study's selection process involved searching 769 articles using keywords, excluding 27 duplicates and 712 articles not meeting research objectives. After a full-text review of 30 selected articles, 19 were excluded, and 11 were selected for inclusion. Acupuncture therapy is the most commonly used non-pharmacological therapy, followed by warm/cold compresses, distraction, and deep breath relaxation. Non-pharmacological therapies can be given to manage pain in patients in the ED. Combining pharmacological and non-pharmacological therapies can provide more analgesia for severe pain.

INTRODUCTION

All emergency cases must be treated immediately because it can lead to unwanted conditions when it is too late to receive treatment (Sanjana et al., 2022). Pain, which is classified as an urgent case, is the most frequent complaint made by patients when they come to the Emergency Department (ED) (Bendall et al., 2011). Pain is an important complaint in the diagnosis of patients carried out in the ED (Park et al., 2015). Pain is subjective, making it difficult to make evidence-based practice recommendations in its management. Inadequate pain care, known as oligo-analgesia, is a major problem in the ED, potentially increasing the risk of chronic pain (Sakamoto et al., 2018). In terms of diagnosing and reducing the severity of pain, the role of the ED nurse is crucial (Sanjana, Widyandari, et al., 2023). From a humanitarian perspective, pain management is very important as it is considered part of human rights (International Pain Summit Of The International Association For The Study Of Pain, 2011). Significant morbidity is also associated with pain, and as research on pain advances, it is becoming increasingly clear that poorly managed acute pain contributes to the development of chronic pain syndrome (Kia et al., 2021).

Until recently, pharmacologic therapies including acetaminophen, opioids, and non-steroidal anti-inflammatory drugs (NSAIDs) were the mainstay of pain management in the ED and after patient discharge. Pharmacologic treatments are effective in reducing pain, but all carry the risk of potentially serious side effects. These include respiratory depression, acetaminophen-induced liver toxicity, renal, cardiac, and gastrointestinal toxicity, as well as the risk of opioid abuse disorders and overdose (Sakamoto et al., 2018). Most studies on the adverse effects of opioids have been conducted in people with persistent non-cancer pain. Of the patients in that group, 78% experienced at least one side effect, with nausea being the most common side effect (21%) (Els et al., 2017). Regarding acute pain, a study on the elderly found that 66% of patients experienced adverse effects during the first week of taking oral opioids for acute musculoskeletal pain. (Hunold et al., 2013). Another study also revealed that, after a 4-day follow-up after discharge from the ED, the rate of opioid side effects was higher compared to NSAID drugs (Pollack et al., 2016).

Given the potential of overdose and impaired usage, prescribing opioids for pain treatment after ED discharge can be difficult. The use of biopsychosocial models and complementary techniques is crucial to enhancing pain treatment. As chronic pain is a complex condition influenced by psychological, social, and physiological factors, non-pharmacological therapies are often used in conjunction with pharmaceutical therapies to provide effective care (Sakamoto et al., 2018). The importance of using non-pharmacologic interventions to improve pain management and reduce opioid use has been highlighted in recent recommendations from the American College of Emergency Physicians and the American Academy of Emergency Medicine. However, the recommendations have been weakened by the lack of systematic evidence to support them (American Academy of Emergency Medicine, 2017).

When non-pharmacological therapies are used in the emergency room, most victims' pain levels are reduced (Pierik et al., 2015). However, despite the widespread awareness of the need for non-pharmacological therapies, several studies have revealed that in a minority of patients, more than 40% of cases, non-pharmacological treatments combined with medications have been shown to reduce pain (Prastika et al., 2018). Non-pharmacological interventions can be used independently to relieve mild pain, but for moderate to severe pain, they should be referred to the importance of using non-pharmacological therapies in the ED the nurse who is responsible must know the interventions that can be given combined with pharmacological interventions. However, knowledge about combining these interventions is still limited, so mapping is very important (Mota et al., 2021). This study aimed to describe the non-pharmacological interventions that nurses can provide in addressing pain experienced by patients in the ED.

RESEARCH METHODS

This research is a literature review of several databases such as Science Direct, ProQuest, PubMed, and Springer Link. Searching for articles in databases using keywords non-pharmacological; Pain; relief; Analgesia; Adult; Emergency Department combined with Boolean “AND”. The inclusion criteria in the selection of articles are articles with observational, correlative, experimental research methods, with adult patient research samples (aged more than 18 years). Researchers only selected open-access articles and used English.

Researchers are looking for all interventions that fall into the category of non-pharmacologic applied in the ER in trauma and non-trauma patients. Articles in this study were selected using the Prism flow chart.

RESULT

The article selection process using the prism diagram found 11 articles that matched the research objectives. The results of the article selection process can be seen in the chart below.

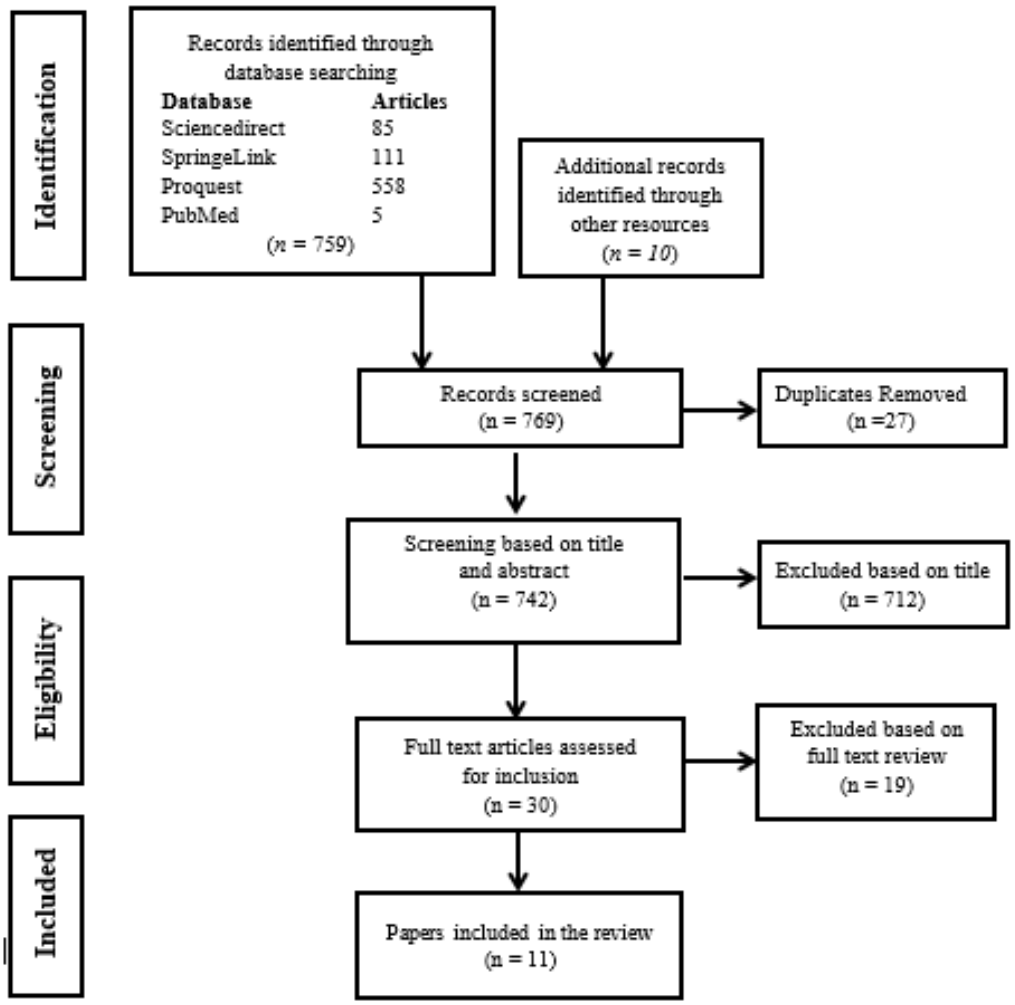

Figure 1. reporting items for study flow diagram

The article selection process begins with searching articles on databases according to the keywords used. From the search results, 769 articles were found in four databases (Science Direct 85; SpringerLink 111; ProQuest 558; PubMed 5) and from other additional sources (10 articles). Researchers checked for duplication in each database and excluded 27 articles with the same title. Furthermore, the researcher screened based on the title and abstract of the study. A total of 712 articles were excluded because they did not fit the research objectives. The researcher then conducted a full-text review of 30 articles that had been selected. Researchers

excluded 19 articles and selected 11 articles that were included in this study. The results of the synthesis table in this study can be seen in Table 1 below.

Table 1 Result of The Study

No.	Author (year)	Method	Non-Pharmacology Intervention	Result
1	Birrenbach et al. (2022)	**Methods:** a prospective self-controlled interventional feasibility pilot study **Sample:** After excluding critically ill or injured patients who were in shock, a study of 52 adult ED patients, aged 18 and older, with musculoskeletal discomfort, headache, and stomach or chest pain was carried out. Using a numerical rating system, the pain level was above 3.	The intervention consisted of applying the Healthy-mind VR simulation as a non-pharmacological distraction technique	Virtual reality simulation is a safe, effective, and feasible way to reduce pain and anxiety in crowded ED. To fully understand its effects on pain perception and resource use, more extensive randomized controlled studies are needed.
2	Bosso et al. (2023)	**Methods:** The randomized controlled study was carried out in a teaching hospital's emergency department. **Sample**: The study makes use of 117 Patients who were admitted to the ED and who were at least 18 years old and qualified if any of the following minor procedures were necessary for their management: suturing, exploration, casting, fracture reduction of a dislocated joint, thoracotomy, paracentesis, or arterial blood gas measurement.	Distraction using Virtual Reality	Adult ED patients who experienced a 3D virtual environment on a head-mounted VR screen during minor surgery had no lower mean procedural pain and anxiety scores than those watching 2D on the screen, despite feeling a larger sensation of telepresence. There was no discernible difference in the frequency or intensity of motion sickness between the two groups.
3	Assiry et al., (2024)	**Methods:** Observational Cross-sectional study. **Sample:** Patients over 18 years of age with a pain intensity score of 4/10 and good cognitive function Heat	Distraction Cold pack Walking Meditation Music Deep breathing Massage Prayer Relaxation	Other non-pharmacologic analgesic interventions are commonly used in adult emergency departments (EDs) for moderate to severe pain. Doctors and nurses often advocate for their use, with most patients using

			Imagery	them in conjunction with pharmacologic analgesia
4	Grissa et al., (2016)	**Methods:** a non-blinded, randomized, prospective interventional experiment comparing IV morphine and acupuncture. **Sample:** 300 patients divided into two groups (150: morphine; 150: Acupuncture) adult patients presenting to the ED with acute pain syndrome	Acupuncture	Compared to IV morphine, acupuncture is safer and has similar effectiveness. The results of this study suggest that acupuncture is safe and effective, and may have a function in managing acute pain syndromes presenting to the ED.
5	A. L. Zhang et al. (2014)	**Method:** a feasibility study (with historical controls) **Sample:** This study included two groups of patients with pain and nausea, categorized into an acupuncture group and a usual care group. The acupuncture group included 200 patients aged 18 years and above, while the usual care group included 100 patients aged 18 years and above. Both groups were screened and matched to compare medical consultation and discharge times.	Acupuncture	Acupuncture, as a safe and acceptable treatment for ED patients, has the potential to reduce pain and nausea. However, careful planning and staff education are required for effective acupuncture studies.
6	Papadopoulos et al. (2017)	**Methods:** A Case Report Study. **Sample:** a 60-year-old man. After being involved in an automobile accident He was transferred from a primary care hospital to the emergency room..	Auricular Acupuncture	After auricular acupuncture was administered, the patient's pain score was drastically reduced, and his ventilation and oxygenation indicators reached safe thresholds. Along with the reduction in pain, hemodynamic disturbances and anxiety were also significantly alleviated.
7	Tu et al., (2022)	**Methods:** This single-center, sham-controlled randomized controlled trial (RCT) was conducted	Acupuncture	Comparing acupuncture and sham acupuncture in an emergency department setting, the results of this

		Sample: 115 patients (aged 18-75 years) who were diagnosed with acute renal colic by radiographic or ultrasonography examination.		randomized controlled trial showed that combining acupuncture with intramuscular diclofenac injection proved safe., quick, and significantly reduced pain for patients with renal colic. When treating acute renal colic, acupuncture can be viewed as an optional adjunctive therapy.
8	Cohen et al., (2017)	**Methods:** a practical, multicenter, randomized, assessor-blinded, equivalency and non-inferiority trial of analgesia comparing, pain relief in the emergency room, acupuncture alone, acupuncture plus medication, and medication alone. **Sample:** People who came to the emergency room of one of four tertiary hospitals in Melbourne with acute low back pain, migraine, or ankle sprain and had a pain level of at least four on a 10-point verbal numerical rating scale (VNRS).	Acupuncture	A study of 1964 patients with acute low back pain, migraine, or ankle sprain found that acupuncture was comparable to pharmacotherapy in providing acute analgesia. However, none of the therapies examined provided optimal acute analgesia, suggesting the need for more effective options. The study concluded that acupuncture as a form of analgesia is safe and acceptable.
9	T. Zhang et al., (2012)	**Methods:** Experimental study **Sample:** 200 patients over 18 years of age	Acupuncture	For individuals experiencing acute pain, acupuncture can be a safe and useful adjunctive intervention in settings such as emergency pain management
10	Liu et al., (2015)	**Methods:** a Clinical Cohort Pilot Study **Sample:** The experimental group and the control group, including 60 respondents aged 20-90 years, were selected according to their	Acupuncture	The outcomes demonstrated that acute low back pain can be significantly and quickly relieved by acupuncture. The results of this study offer clinical proof of

		inclination toward undergoing acupuncture treatment.		acupuncture's efficacy and safety when treating acute low back pain in emergency rooms.
11	Su et al., (2022)	**Methods:** a preliminary prospective cohort clinical investigation **Sample:** This study examined 619 ileus patients who were treated in Huang Tzu Chi Hospital's Emergency Department (ED) between January and December 2019. Two groups of patients were created: one for Western medicine and the other for Western medicine plus acupuncture. Patients who had received emergency care using Western medicine were included in the group receiving acupuncture along with medicine.	Acupuncture	As a result of the shorter treatment duration, acupuncture was found to be beneficial in lowering pain. As an example of managing ileus patients in the ED, this study proposes integrating Western and Chinese medical treatments.

DISCUSSION

In this literature review, we identified 11 research articles that discussed the management of pain complaints in the ED with non-pharmacological techniques. Referring to the results found, researchers identified acupuncture therapy to be the most widely practiced therapy. Where these results are also in line with previous research, namely acupuncture being the most frequently given non-pharmacological therapy (Kia et al., 2021). Other non-pharmacological therapies that are also carried out in the ED include warm/cold compresses, distraction, deep breath relaxation, and other non-pharmacological therapies. Almost all of the research results reviewed by researchers convey the effectiveness of acupuncture in reducing patient pain complaints. However, in some cases such as severe pain, a combination of pharmacological and non-pharmacological therapies will provide more analgesia benefits for patients who complain of pain.

Until now, pain management guidelines still focus on providing pharmacological therapy in managing pain, especially in the ED (Lipp et al., 2013). The results of the literature review in this study indicate that non-pharmacological therapies, especially acupuncture, can be given to patients with complaints of pain in the ED. In addition, distraction therapy utilizing Virtual Reality technology can also be used to treat pain in crowded ED conditions. The benefits of non-pharmacological therapies and their application in the ER still require socialization and increased understanding for nurses on duty. The nursing profession guidelines for providing

nursing care have intervention sections such as observation, nursing therapy, collaboration, and education (Persatuan Perawat Nasional Indonesia, 2018).

In comparison with other treatment areas such as critical care, medical-surgical care, and operating rooms, the provision of non-pharmacological interventions in overcoming is still used referring to the side effects of the use of pharmacological analgesics when used for a long period (Kassim et al., 2023; Leutualy et al., 2022; Sanjana, Agustini, et al., 2023). Consistent with the findings of the researchers, earlier research has also demonstrated the effectiveness of non-pharmacological therapies in lowering pain in emergency rooms. However given the modest size of the majority of the current trials, more research is necessary to determine how best to employ them to manage ED pain (Sakamoto et al., 2018). Non-pharmacological therapies given in managing patient pain in the ED do not have any side effects, but the selection of techniques and timing of administration must be considered to get optimal results (Kassim et al., 2023).

In comparison to pharmacological therapies that have some reported side effects, non-pharmacological interventions in the ED are essential to reduce opioid use. Reducing opioid use in response to the current opioid epidemic is another key reason to use non-pharmacological therapies as part of a multimodal strategy for pain management in the ED (Sakamoto et al., 2018). Acupuncture is delivered faster and more effectively than morphine in reducing acute pain, with fewer adverse reactions (Grissa et al., 2016). However, to fully understand the impact of non-pharmacological interventions, it may be important to consider the outcomes of using other medications.

As a nurse, we have the responsibility to provide comprehensive services focusing on complaints or patient responses to their illness including Bio-psycho-social-spiritual. Pain complaints that become bad experiences that come from all sources of patients will be well managed through comprehensive interventions. Not only pharmacology but also non-pharmacological therapy. In addition, it is also necessary to add effective communication when providing interventions, so that patients and families feel comfortable and have a positive perception of the interventions provided by nurses. The use of non-pharmacological therapy can be done in the ED but needs to be combined with pharmacological therapy to be able to overcome severe or severe pain.

CONCLUSION

The results of this study summarize that non-pharmacological therapies can be given to manage pain in patients in the ED. Of the eight articles reviewed, acupuncture was the most frequent and effective therapy in managing pain in the ED. The provision of non-pharmacological therapy in conjunction with pharmacological therapy can be given to overcome patients who have severe pain. Further experimental research is needed to determine the extent of the effectiveness of non-pharmacologic therapies in managing patient pain in the ED.

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