

## APPLICATION OF COLD PACK TO RELIEVE POST-ORIF PAIN

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### Abstract

*Surgery is one way to treat a broken bone. Surgery can cause pain. To deal with this pain, patients need to be managed properly so they can control their pain. There are ways to manage pain without using medicines, like using a cold pack. This app is for patients who have had MIPO ORIF in the Edelweis Room at Arifin Achmad Regional General Hospital in Riau Province. The application method is a case study based on Evidence-Based Practice (EBP). This treatment was given to one patient once a day for 20 minutes over two days. Before and after the application, the author measured the patient's pain level using the Numeric Rating Scale (NRS). The things they looked at included pain complaints, grimacing, restlessness, difficulty sleeping, nausea, blood pressure, pulse rate, and respiration. After two days of using the cold pack, the pain levels dropped from 4 (moderate pain) to 2 (mild pain). This shows that cold therapy can reduce pain in patients after MIPO ORIF. So, cold pack therapy can be an option for patients to try themselves at home. Nurses can use cold packs as part of a patient's care after an operation. It is best to use a cold pack for at least three days to help manage pain after ORIF.*

**Keyword:** Cold Pack; Fracture; Pain; ORIF.

### INTRODUCTION

The World Health Organization (WHO) says that a fracture is a break in bone tissue that is usually caused by an injury. It can happen anywhere on the skeleton. Bones can break because of things like falling over, traffic accidents or sports injuries. They can also break because of medical problems that make the bone weak, like osteoporosis or bone cancer. According to research in Indonesia (Risesdas, 2018), men are more likely to have injuries from broken bones than women. There are two ways to treat a broken bone: surgery or no surgery. One common surgical method is Open Reduction Internal Fixation (ORIF), which aims to stabilise and align the broken bone. But many people have pain after surgery because of damage to tissue during the operation. If this pain is not treated properly, it can make it harder for the patient to recover and reduce their quality of life. So, it's really important for nurses to be able to manage pain well in patients who have had an operation. There are two ways to manage pain: with or without drugs. There are two types of pain relief: pharmacological and non-pharmacological [1].

Pharmacological methods involve the administration of analgesics, while non-pharmacological methods include various therapeutic techniques that promote comfort and reduce pain perception. One easy and cheap way to treat this is with a cold pack. Applying a cold pack to the affected area can help reduce pain. This is because the cold can decrease blood flow to the area, reducing swelling and lowering the speed at which nerves can carry signals [2].

This can help to reduce the number of pain signals sent to the brain. Studies have shown that cold packs can help reduce pain after surgery. Siam (2023) found that patients who had surgery to repair their bones (called "post-ORIF") felt less pain when they used a cold pack.

Research by Desnita et al. (2021) also found that using cold compresses reduced pain from moderate to mild, with a statistically significant result ( $p = 0.002$ ). These findings show that cold packs can be used to treat pain after surgery [3].

A study on 28 June 2025 in the Edelweis Room of Arifin Achmad Regional General Hospital in the Riau Province found that broken bones were the most common condition treated there. Based on this, the author decided to use cold pack therapy to help manage pain after surgery for patients with broken bones. They focused on a patient who had had an operation called MIPO ORIF. The aim of this study was to see how well cold packs can help patients with broken bones to reduce pain after surgery. This will let nurses use cold packs as an alternative or extra way to treat pain, which should make patients feel better and recover more quickly.

## RESEARCH METHODS

This study used an Evidence-Based Practice (EBP) design to look at how cold packs can be used to help patients with broken bones manage pain after surgery. The EBP approach is all about making clinical decisions based on the best available evidence, professional expertise, and the patient's conditions. The setting and the people taking part the operation took place in the Edelweis Room of Arifin Achmad Regional General Hospital in the Riau Province on 5–6 July 2025. The person taking part in the study was a 13-year-old girl (An. S) who had an operation to fix a broken bone in her leg. The inclusion criteria were:

1. Patients who have had an operation for a broken bone.
2. They are aware and willing to cooperate (*compos mentis*).
3. The pain was described as mild to moderate (NRS 1–6).

The following people were not included in the study:

1. Patients who are unconscious.
2. Patients experiencing severe pain (NRS > 6).

This is how we deal with the situation:

The treatment followed the usual steps for cold pack therapy, which were adapted from Dewi Putri Handayani et al. 2024 [4]. A OneMed Cold Pack was used, and it is approved by the Indonesian Ministry of Health (AKL 11403220257). The cold pack was stored in a freezer for 24 hours before use to reach the best temperature of between 0 and 10°C. During therapy, the cold pack was wrapped in a clean towel so that it wasn't touching the skin directly [5].

The therapy was done once a day for two days in a row, with each session lasting 20 minutes. The cold pack was put on the area around the cut (not directly on the bandage). The test was done two hours before the painkiller was given to see what effect it had on reducing pain on its own [6].

The objective of this study is to explore the process of data collection and measurement. The measurement of pain intensity was conducted utilising the Numeric Rating Scale (NRS), a tool that ranges from 0 (no pain) to 10 (extreme pain). The pain score was recorded prior to and following each session. In addition to the pain score, the following indicators were observed:

Facial expressions, such as grimacing, are employed to convey emotions.

- Restlessness

The occurrence of sleep disturbances has been documented.

- Nausea

A comprehensive assessment of the patient's vital signs, encompassing blood pressure, pulse rate, and respiratory rate, is imperative to ensure optimal patient monitoring and management.

These indicators were utilised to evaluate outcomes in accordance with the Indonesian Nursing Outcome Standards (SLKI) for pain management.

### Data Analysis

The following essay will present a data analysis. The data were analysed descriptively by comparing pre- and post-intervention pain scores and observing changes in non-verbal and physiological indicators. The results were interpreted in order to ascertain the effectiveness of cold pack therapy in reducing postoperative pain among fracture patients [7].

### RESEARCH RESULTS

The 13-year-old girl (An. S) was given cold packs to help her heal. She had broken her right thigh bone and had an operation to put in a metal rod in the Edelweis Room of Arifin Achmad Regional General Hospital in the Riau Province. The treatment was given once a day for two days in a row, each one lasting 20 minutes. Before and after each treatment, the patient's pain level was measured using the Numeric Rating Scale (NRS). The observations included subjective reports, non-verbal cues, and vital signs.

On the first day (5 July 2025), the patient said they had moderate pain (on a scale of 1 to 10, where 1 is no pain and 10 is the worst pain imaginable, they said they were at 4) and that this made them grimace and restless. After 20 minutes of applying a cold pack, the pain went down to a 3 on the pain scale, and the patient looked more relaxed.

On the second day (6 July 2025), the patient said their pain was NRS = 3, and after the treatment, it went down to NRS = 2 (mild pain). The patient was less grimacing and restless, and said she was more comfortable and slept better. The assessment of vital signs showed a small improvement in the patient's health. The blood pressure reading was between 128/72 mmHg and 115/60 mmHg. The pulse rate is between 87 and 80 beats per minute. The breathing rate is between 20 and 19 beats per minute. These changes showed that they were more relaxed and felt less pain.

**Table 1 shows how pain intensity changed before and after the therapy.**

Day/Date	Pain Scale Before Therapy	Category	Pain Scale After Therapy	Category
Saturday, 05 July 2025 (08:10 WIB)	4	Moderate Pain	3	Mild Pain
Sunday, 06 July 2025 (08:10 WIB)	3	Mild Pain	2	Mild Pain

source: primary data

**Table 2 describes the improvement in clinical indicators based on the Indonesian Nursing Outcome Standards (SLKI).**

Indicators	Before Therapy	After Therapy
Grimace	Moderate	Decreasing
Pain Complaint	Moderate	Decreasing
Sleep Difficulties	Moderate	Decreasing
Nausea	Moderate	Decreasing
Restless	Moderate	Decreasing
Pulse Rate	Moderate	Improving
Blood Pressure	Moderate	Improving
Respiratory Rate	Moderate	Improving

source: primary data

The results showed that the pain got less intense and the patient felt more comfortable after two days of using the cold pack. These findings support the idea that cold therapy can effectively reduce pain after surgery for patients who have had a broken bone fixed using a bone graft .

## DISCUSSION

The use of cold packs to treat pain after an operation reduced how much pain patients felt. The results of this study are in line with other research that shows cold therapy works well as a non-drug treatment for pain after surgery [8]. Cold therapy works by making blood vessels in the area smaller, which reduces how much the tissue uses oxygen, swelling and inflammation. This process slows down how quickly your nerves can send signals to your brain, which means you feel less pain. What's more, when you feel cold, it activates some sensory fibres in your body. These fibres stop pain from being sent from other fibres in your body. This is according to the gate control theory of pain. All of these things together make patients feel less pain and more comfortable [2][9].

In this case, the patient's pain went down from a 4 (moderate pain) on the first day to a 2 (mild pain) on the second day. They also found that patients were less likely to show non-verbal signs like grimacing, restlessness and difficulty sleeping after therapy. These results show that cold packs can effectively reduce pain and improve comfort for patients after surgery[10].

The results of this practice are similar to those of several previous studies. Desnita et.al, (2021) found that applying a cold compress for 10–15 minutes significantly reduced pain after an operation ( $p = 0.002$ ) [3]. Lubis et al. (2021) also reported that patients with fractures who received cold compress therapy for three days in a row had significantly less pain ( $p = 0.001$ ) [11]. In a similar way, Mayanti and Sumiyarini (2023) saw that pain got less intense on a scale of 5 to 1 after three days of using a cold pack [12].

What's more, cold pack therapy has several benefits compared to medication. It is safe, cheap, and easy to put on, so it can be used in hospitals and people's homes. For nurses, it provides an extra way to treat pain, in addition to giving patients medicine to help with the pain [13]. This technique also lets patients and their families play an active part in managing their pain, which can improve how well they look after themselves and how quickly they get better. But there were some problems when they tried to use it. One problem was that it was hard to find patients who met the requirements for the study during the study period. The test was only done on one patient, so it is difficult to know how the results can be applied to other people

[14]. In future studies, a larger sample size and longer intervention duration should be used to strengthen the evidence supporting cold pack therapy as an effective nursing intervention [15]. This application, which is based on real-world evidence, shows that cold pack therapy can be used as part of the usual care plan for patients who have had a fracture and are recovering from an operation. It supports the holistic nursing approach, which combines drug and non-drug treatments to improve patient comfort and speed up recovery [16].

## CONCLUSION

The use of a cold pack on the injury site was an effective way to reduce pain after surgery (called Open Reduction Internal Fixation or ORIF) without the use of medicines. The treatment was given over two days, with each session lasting 20 minutes. This made the pain go down from being moderate to mild. They also noticed that patients' pain was shown by other ways, like grimacing, being restless and not being able to sleep. These things also got better after the therapy.

This shows that cold packs can be used as a type of nursing care that is based on evidence, to help with pain that is treated with medication. It makes patients more comfortable, speeds up recovery, and nurses can do it on their own as part of their work after surgery. For nursing schools, this research is a useful guide and encourages the use of non-pharmacological pain management techniques in nursing courses. Nurses are encouraged to use cold packs as part of normal care after surgery to help patients recover better. It is recommended that future studies be done. These should involve a larger sample size and longer observation periods. This will help to strengthen the evidence supporting cold pack therapy in various postoperative conditions.

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