

Nursing care for chronic kidney disease patients with cold compresses to reduce pain scale

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Abstract

Chronic Kidney Failure (CKD) is a progressive and irreversible kidney dysfunction that causes fluid and electrolyte imbalances, as well as the accumulation of metabolic waste products in the body. CKD patients undergoing hemodialysis often experience pain due to the arteriovenous fistula (AV-fistula) needle insertion and the dialysis process, which can reduce patient comfort and quality of life. One non-pharmacological intervention that can be used to reduce pain is cold compresses. The purpose of this case study is to describe nursing care management for a CKD patient using cold compresses to reduce pain. The method used is a case study with a nursing process approach, including assessment, nursing diagnosis, intervention, implementation, and evaluation. The study subject was a 58-year-old male patient with a medical diagnosis of Chronic Kidney Disease (CKD) who was admitted to Hospital X from April 1 to 4, 2026. Data were obtained through interviews, observation, physical examination, and medical record review. The assessment results showed the patient complained of pain in the left upper extremity after hemodialysis with a pain scale of 5 accompanied by grimacing. The nursing diagnosis was acute pain related to a physical injuring agent. The intervention provided was pain management through cold compress therapy for four days. Evaluation results showed a decrease in the pain scale from 5 to 0, the patient no longer grimaced, and vital signs were within normal limits. The application of cold compresses has been shown to help reduce pain intensity in patients with chronic kidney disease (CKD) after hemodialysis. Therefore, cold compresses can be used as an effective non-pharmacological nursing intervention in pain management in patients with CKD.

Keywords: Acute Pain, Chronic Kidney Failure, Cold Compress, Hemodialysis, Nursing Care

INTRODUCTION

The kidneys are vital organs in our body and are integral to maintaining homeostasis. Kidney dysfunction is very common today and can occur at any age with varying degrees. Kidney disorders include acute and chronic kidney failure, ranging from stage 1 to stage 5, and end-stage renal failure (Parimala, L, 2021). Chronic kidney disease (CKD) is a clinical syndrome caused by a chronic, progressive, and irreversible

decline in kidney function. This impaired kidney function occurs when the body fails to maintain metabolism and fluid and electrolyte balance, leading to the retention of urea and other nitrogenous wastes in the blood. This kidney damage results in problems with the body's ability and strength, disrupting work activities, making the body easily tired and weak, thus reducing the patient's quality of life.

According to data from the Global Burden of Disease (GBD), there were 697.5 million cases of chronic kidney disease (CKD) worldwide in 2017. In 2017, there were also 1.2 million deaths due to chronic kidney disease. This ranks chronic kidney disease as the 12th leading cause of death, with a 41.5% increase from 1990 to 2017 (GBD Chronic Kidney Disease Collaboration, 2020).

The 2018 Basic Health Research (RISKH) found that the prevalence of chronic kidney disease in Indonesia reached 0.38%, or 713,783 people. Of these, only 2,850 underwent hemodialysis. North Sumatra ranked third in the province with the highest number of cases of chronic kidney disease, after West Java and East Java. The prevalence of chronic kidney disease in North Sumatra reached 0.33%, or 45,792 people aged 15 years and older. Meanwhile, only 173 patients underwent hemodialysis in North Sumatra.

According to data from the Indonesian Renal Registry (2018), the number of active patients undergoing hemodialysis doubled compared to 2017. Active patients, according to the Indonesian Renal Registry (IRR), are both new and existing patients undergoing hemodialysis therapy. The number of active patients in 2017 was 77,892, while in 2018 it was 132,142 (Indonesian Renal Registry (IRR), 2018).

Chronic kidney disease (CKD) is kidney damage that causes the kidneys to be unable to remove toxins and waste products from the blood, characterized by the presence of protein in the urine and a decreased glomerular filtration rate, lasting more than 3 months. Patients with CKD require treatment to help survive. CKD treatment is divided into two: conservative management and renal replacement therapy. Conservative treatment of CKD consists of actions to slow the progression of kidney failure, stabilize the patient's condition and treat any reversible factors. Meanwhile, renal replacement treatment can be done with a kidney transplant or hemodialysis.

During hemodialysis, blood will flow from the body to the dialysis machine through the dialysis tube, in the dialysis machine the blood is filtered, this process is

called a dialyzer which will cause damage to the skin layer and blood vessels which causes pain stimulation.

Pain is an unpleasant sensory and emotional experience due to tissue damage, the mechanism of which arises based on several multiple stimulation processes that cause the perception of pain. Pain can cause stress, fear, depression and reduce the patient's quality of life. The application of cold compresses has been used for a long time as an effective pain relief technique (Bahrudin, 2018)

Cold compresses for pain are widely used due to their physiological effects, such as vasoconstriction, slowing tissue metabolism, increasing blood viscosity, and acting as a local anesthetic. Cold compresses can reduce blood flow and capillary permeability by causing arteriolar vasoconstriction, thereby reducing bleeding. They also reduce blood flow velocity and increase viscosity and coagulation (ürük, G., Taşcı, S., Elmalı, F. & A., & Kalay, 2017).

Based on the aforementioned phenomena, the authors are interested in further discussing Nursing Care Management for Chronic Kidney Failure (CKF) patients using cold compresses to reduce pain levels in the inpatient ward of Royal Prima Medan General Hospital in 2023.

METHOD

Using a case study method with a nursing process approach that includes assessment, nursing diagnosis, intervention, implementation, and evaluation. The research subject was Mr. S, 58 years old with a medical diagnosis of CKD who was treated at Hospital X from April 1 to 4, 2026. Data were obtained through interviews, observations, physical examinations, and medical record reviews.

Data Analysis

Data	Etiology	Problem
<p>DS: The patient complained of pain in the left upper extremity</p> <p>DO : The patient appears to be grimacing, pain scale 5</p>	<p>Physical injury agent (post HD)</p> <p>↓</p> <p>Kerusak Vascular damage to blood vessels</p> <p>↓</p> <p>Impaired cerebral circulation</p> <p>↓</p> <p>Increased intracranial pressure</p> <p>↓</p> <p>Painful</p>	<p>Acute Pain</p>

RESULT AND DISCUSSION

Based on the results of the nursing care case, the author discusses the theory and case report of Nursing Care Management in Chronic Kidney Failure Patients with the Application of Cold Compresses to Reduce the Pain Scale in the Inpatient Room of Royal Prima Medan Hospital. Activities in preparing nursing care, the researcher carried out a process that included nursing assessment, nursing diagnosis, making nursing interventions, implementing nursing care, and conducting nursing evaluations with the following description:

Nursing Assessment

Assessment is the primary and fundamental step of the nursing process. Data is obtained from interviews with the patient, family, and medical record documentation.

1. The chief complaint is pain in the left upper extremity.
2. During the assessment, the patient's primary complaint was pain and numbness in the hand, with pain on the hand and after the fistula was removed, and the pain scale was 5.

Based on the theoretical review, the primary complaint in patients with chronic renal failure varies widely, especially if there are coexisting secondary diseases. Complaints can include decreased urine output (oliguria) to anuria, decreased consciousness due to complications in the circulatory-ventilatory system, anorexia, nausea and vomiting, diarrhoea, fatigue, a urea-smelling breath, and pain. However, the assessment of this case revealed only one complaint: pain.

Current medical history

The current medical history shows that the cause of the patient's pain that does not heal is frequent av-vistula needle insertions because the patient has a history of chronic kidney failure, things that improve the patient's condition are dialysis twice a week, which can be seen from the patient looking tired/lethargic, and the patient indicates the location of the pain, namely in the left extremity.

Physical examination

The current medical history shows that the cause of the patient's pain that does not heal is frequent av-vistula needle insertions because the patient has a history of chronic

kidney failure, things that improve the patient's condition are dialysis twice a week, which can be seen from the patient looking tired/lethargic, and the patient indicates the location of the pain, namely in the left extremity.

Nursing Diagnosis

According to the 2017 Indonesian Nursing Diagnosis Standards (SDKI), four diagnoses emerged in the theoretical review:

1. Acute pain related to physical injuring agents
2. Hypervolemia related to excess fluid and sodium intake
3. Activity intolerance related to weakness
4. Ineffective peripheral perfusion related to increased blood pressure

Of the nursing diagnoses listed above, based on the theoretical review, only one nursing diagnosis emerged in the case review, namely acute pain. This is because the patient's assessment did not provide subjective and objective data, thus not supporting the diagnosis.

The nursing diagnoses established in the case review include: Acute pain related to physical injuring agents. The nursing diagnoses listed above are nursing diagnoses that can be established in the case review based on data supported by subjective and objective data obtained during the patient assessment. Referring to the Indonesian nursing diagnosis standards (SDKI), the nursing diagnoses in the theoretical review discussed in chapter 2 consist of 4 nursing diagnoses, which have been described above and in the case review discussion only 1 nursing diagnosis has similarities

Nursing Interventions

In the 2017 Nursing Interventions (SIKI) discussion on patient interventions, several interventions emerged from the theoretical review:

1. Pain Management
2. Activity Therapy
3. Hypervolemia Management
4. Circulation Care

Of the four interventions mentioned above, these interventions are theoretically reviewed based on the discussion in Chapter 2. These interventions are linked to the nursing diagnoses established by the Indonesian Nursing Diagnosis Standards (IDHS). These interventions include Pain Management, Activity Therapy, Circulation Care, and

Hypervolemia Management. The interventions identified in the case study are Pain Management (Cold Compresses). The absence of these three interventions is due to their lack of support from assessment data and established nursing diagnoses.

Nursing Implementation

The author performed nursing actions according to the previously planned actions, which were carried out from June 15-17, 2023. Not all actions were carried out by the author, as the author does not provide 24-hour care for the client. However, as a solution, the researcher delegated the action plan to the ward nurse and the student practicum on duty in the ward. The researcher then conducted a documentation study of the nursing actions that had been carried out according to the plan. The nursing implementation carried out related to the diagnosis of acute pain related to a physical injury agent included measuring the patient's pain scale, measuring the patient's vital signs, and applying cold compresses to the painful area for three days.

Nursing Evaluation

The evaluation of the nursing care provided to the patient from June 15-17, 2023, is as follows: Acute Pain related to physiologically damaging agents and/or increased blood pressure, grimacing, and restlessness. On the first day, June 15, 2023, the patient reported continued pain in the left upper extremity with a scale of 5.

The patient's vital signs were BP: 160/85 mmHg, HR: 90 beats/minute, RR: 20 beats/minute, and Temp: 36°C. Therefore, the evaluation continued on the second day, with the result that the pain was still felt with a pain scale of 3. Therefore, the problem was not resolved, and cold compress intervention was continued on the third day. On the third day, the patient reported reduced pain, stopped intervention, and vital signs were within normal limits.

CONCLUSION

Based on the nursing process conducted on a chronic kidney disease patient complaining of scale 5 pain in the extremity due to an AV-fistula (cimino) puncture, the diagnosis of Acute Pain related to physical injuring agents was successfully resolved. The intervention plan was structured according to SDKI, SLKI, and SIKI guidelines utilizing Pain Management, with implementations including monitoring vital signs, assessing skin conditions, and applying cold compresses to the injured area. A three-day SOAP evaluation showed highly favorable and adaptive results, as the patient was

cooperative, stopped grimacing, reported reduced pain, and maintained vital signs within normal limits, confirming that the patient's nursing problem has been resolved.

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