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The Effectiveness of Sipping Ice Therapy and Chewing Gum in Reducing Thirst Intensity Among Hemodialysis Patients with Chronic Kidney Disease

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ABSTRACT

Background: Hemodialysis is a vital procedure for patients with chronic kidney disease (CKD), yet one of its common side effects is excessive thirst due to fluid intake restrictions. This persistent thirst not only causes discomfort but also negatively impacts patients' quality of life and may worsen clinical outcomes if not managed properly. Various non-pharmacological interventions, such as sipping ice therapy and chewing gum, have been suggested to alleviate thirst intensity among hemodialysis patients; however, their effectiveness requires further evaluation.

Purpose: This study aims to examine the effectiveness of ice therapy and chewing gum in reducing thirst intensity in hemodialysis patients.

Methods: This study employed a case study approach with a sample of two patients to explore the application of sipping ice therapy and chewing gum in reducing thirst intensity among hemodialysis patients with chronic kidney disease at Dr Soeradji Tirtonegoro General Hospital, Klaten. The Visual Analogue Scale (VAS) was used as an instrument to measure thirst intensity. Each intervention was administered separately to evaluate its individual effectiveness in alleviating thirst, and measurements were taken to document changes in VAS scores before and after the interventions.

Results: In the application of therapy, Mrs. S experienced a reduction in thirst intensity by chewing gum, decreasing from a score of 6 to 4 on the VAS scale (a reduction of 2 points). Meanwhile, Mrs P showed a reduction in thirst intensity through the sipping ice therapy, decreasing from a score of 7 to 3 (a reduction of 4 points).

Conclusion: Sipping ice therapy and chewing gum can effectively reduce thirst intensity among hemodialysis patients with chronic kidney disease. Further studies with larger sample sizes are recommended to validate these findings.

Keywords: *Chewing Gum; Chronic Kidney Disease; Hemodialysis; Sipping Ice Therapy*

INTRODUCTION

Chronic kidney disease is a condition characterised by kidney function which decreases progressively over many years. Progressive and reversible are signs of CKD. Symptoms of CKD include swelling in the upper and lower extremities, nausea, vomiting, loss of appetite, dizziness, fatigue, and shortness of breath. Patients with chronic kidney complications, namely disorders of the acid-base balance in the blood, are at risk of experiencing metabolic disorders, namely cardiovascular disease, kidney failure and diabetes (Jundiah et al., 2023).

According to the World Health Organization (WHO), in 2019, the incidence of CKD in the world increased from the 13th to the 10th death rate. The lift increased from 813,000 to 1.3 million. Based on data from Riskesda, the incidence of CKD in 2018 was 0.38% of the total population of Indonesia, namely 252,124,458 people, so there were 713,783 people suffering from it. *Chronic Kidney Disease* (CKD). The prevalence of hemodialysis in Indonesia alone is 2,850 people, while the incidence of CKD in Central Java province based on doctor's diagnosis in 2018, the population aged > 15 years was 96,794 people (Amir A, 2023).

The main cause of *chronic kidney disease* is a complication of systemic diseases, namely hypertension, diabetes, leptospirosis, chronic kidney infections, urinary tract obstruction or kidney stones, collagen disease, drugs, chemicals and environmental factors (Sutisna & Khira, 2023). Impaired kidney function will result in damage to the system of excretion of substances in the body, resulting in the accumulation of dangerous chemicals in the body and metabolic changes occurring in addition to an increase in serum urea levels (uremia) as a result of the accumulation of toxic substances in the body. In this condition, other organ systems are disrupted, such as the circulatory, nervous, digestive, respiratory, skin, blood and hormone-producing glands (Wijayanti et al., 2024).

The main problem experienced in CKD patients is an increase in fluid volume (hypervolemia) between two dialysis times, which is characterised by oedema, shortness of breath and an increase in fluid volume, which is a manifestation of increased body weight or increased IDGW (interdialytic weight gain) (Siahaan, 2019). Someone diagnosed with chronic kidney disease Those who are in the PGTA stage (end-stage kidney disease) require hemodialysis therapy, which is the most frequently used dialysis therapy. Patients undergo hemodialysis 2-3 times a week with a hemodialysis time of 4-5 hours, depending on the stage. The purpose of hemodialysis is to remove waste. Protein metabolism and correcting fluid and electrolyte balance disorders (Rahayu & Sukraeny, 2021)). When patients do not undergo hemodialysis in the days between dialysis patients will experience fluid accumulation. Patients who do not adhere to a fluid-restricted diet will experience *overhydrate,* which causes fluid to accumulate and cause oedema. Blood pressure increases, makes the heart work harder, and fluid builds up in the lungs, resulting in shortness of breath and, indirectly an increase in body weight (Daryani et al., 2020). To prevent fluid buildup in the body, patients are still required to limit fluid intake when not undergoing hemodialysis (Syamsuddin et al., 2023).

Hemodialysis patients must maintain fluid intake between hemodialysis treatments. The effect of fluid restriction is that a decrease in oral intake will cause a dry mouth and the tongue is rarely supplied with water. This condition will cause a feeling of thirst. Thirst is an awareness of the need for fluids in the body. A dry mouth, among other things, can affect the feeling of thirst. Thirst is the most common problem experienced by patients undergoing hemodialysis with limited fluid intake and also occurs in patients with *chronic kidney disease.* Due to fluid restrictions, thirst can result in patients not adhering to a diet that limits fluid intake so patients experience overhydration or excess fluid (Armiyati & Khoiriyah, 2019). Excess fluid This can occur due to excessive fluid intake as a result of not being able to control thirst. Thirst management must be managed or controlled. Various studies say that thirst management can be done in various ways, namely by sucking ice cubes (sipping ice therapy), gargling with plain water, gargling with mouthwash, chewing gum or mints and use fruit

frozen fruit (Philips et al., 2017). When the patient does not undergo hemodialysis, the patient will experience the problem of fluid accumulation in the body, so chronic kidney patients must limit their fluid intake. This fluid restriction will cause a feeling of thirst, which causes the patient's mouth to feel dry due to reduced saliva production or decreased production of the salivary glands, so the patient will drink lots of water to reduce these complaints. There are several ways to overcome thirst in patients with chronic kidney disease who suffer from hypervolemia problems. Sipping ice therapy is one of the effective measures to reduce the thirst experienced by patients chronic kidney disease who are undergoing hemodialysis. Other research also states that it is an intervention that can be applied to overcome the problem of thirst in patients with *chronic kidney disease* namely by chewing ice cubes because it can give a fresher feeling than drinking mineral water little by little (Jundiah et al., 2023). Sucking on ice cubes is more effective than gargling with plain water to reduce thirst in patients *chronic kidney disease* who underwent hemolysis (Nurhayati, 2022).

Besides *sipping ice therapy*, chewing gum is also considered effective in reducing the intensity of thirst in CKD patients. In research conducted (Mansouri et al., 2018), it is stated that chewing gum can be used as an alternative treatment to reduce thirst in hemodialysis patients by chewing gum. 5 minutes can activate saliva production. This is in line with research conducted by Hamnari Sarwanti 2020 which states that chewing gum has the effect of reducing dry mouth (*xerostomia*) in HD patients. Chewing gum can increase blood flow to the salivary glands and then stimulate them to produce more saliva.

From the description above, the author provided nursing care to two patients *chronic kidney disease* who are undergoing hemodialysis. Where researchers carried out nursing interventions, namely implementing *sipping ice therapy* and chewing gum in patients with *chronic kidney disease* (CKD) who underwent hemolysis to reduce the intensity of thirst at DR Soeradji Tirtonegoro Hospital, Klaten.

MATERIALS AND METHODS

This study employed a case study design to explore the application of sipping ice therapy and chewing gum in managing thirst among patients with chronic kidney disease undergoing hemodialysis. Conducted in October 2023 at the Hemodialysis Unit of DR. Soeradji Tirtonegoro General Hospital, Klaten, the research focused on two patients who addressed the nursing issue of hypervolemia through different approaches. One patient used chewing gum, while the other implemented sipping ice therapy.

The Visual Analogue Scale (VAS) was utilized to measure the patients' thirst intensity before and after the interventions. Data collection was conducted through observation, interviews, and document review. Observations provided real-time insights into the patient's responses to the therapies, while interviews captured subjective experiences and perceptions of thirst relief. Document review involved analyzing medical records to gather relevant clinical information and contextualize the findings. This combination of methods allowed for a comprehensive understanding of the effects of both therapeutic interventions.

RESULTS

Table 1. Subjects of Case Study 1

Assessment	Pre Hemodialysis

	Focus Data Subjective Data - Mrs. S said he often felt thirsty - Mrs. S said BAK was not smooth and often incomplete, BAK 2-3x/day with a yellow color - Mrs. S said to drink 2-3 glasses of starfruit per day - Mrs. S said his weight rose 1 kg in 1 week - Mrs. S said he often felt thirsty and said he felt thirsty on a scale of 6 Objective Data Observasi Tanda vital : - Blood Pressure: 163/92 mmHg - Temperature: 36'C - Pulse: 93x/minute - Respiratory rate: 20x/minute - Current weight: 62 kg - Last Body Weight : 61 kg - Dry Body Weight: 61 kg - IDWG : 1.6% Lab Examination Results: - Ureum 143 mg/dL - Kreatinin 7.30 mg/dL - Hemoglobin 11.8 g/dL - Potassium 3.53 mEq/dL
Nursing Diagnosis	Hypervolemia associated with impaired regulatory mechanisms (D. 0022)
Nursing Intervention	Chew gum

Based on the data in Table 1. The results of the assessment can formulate a nursing problem in subject 1, namely Hypervolemia related to Disorders of Regulatory Mechanisms. The data obtained to confirm this diagnosis includes subjective data which includes the patient saying he often feels thirsty, urinating 2-3x/day is not smooth or even incomplete, drinks 2-3 glasses/day, weight increases by 1 kg and the scale of perceived thirst is on a scale of 6 where the thirst felt is in the (moderate) category. Meanwhile, objective data obtained from the patient included observation of vital signs, BP: 163/92 mmHg, S: 36'C, N: 93x/minute, RR: 20x/minute, current weight is 62 kg while previous weight was 61 kg where there is weight gain in the patient. The supporting examination that supports the diagnosis is IDWG: 1.6%, laboratory examination results Ureum : 143 mg/dL, Kreatinin : 7.30 mg/dL, Hemoglobin : 11.8 g/dL, Kalium : 3.53 mEq/dL.

The approach used in subject 1 was chewing gum to reduce the thirst felt by the patient, using 1 piece of gum which was chewed for 10 minutes before carrying out the intervention to measure the level of thirst in the patient using a VAS instrument, measurements were carried out before and after the intervention. to determine the effectiveness of the therapy used.

From the data measuring the patient's thirst level after the chewing gum intervention, the evaluation results showed that the patient's thirst level decreased, whereas, before the intervention, the patient's perceived thirst was on a scale of 6 in the moderate category) after the intervention, the thirst scale decreased to a scale of 4 in the category (currently).

Table 2. Subjects of Case Study 2

Assessment	Focus Data Subjective Data - Mrs. P said he often felt thirsty - Mrs P said BAK was possible but not smoothly and often incomplete with a yellow colour - Mrs. P said to drink 2-4 glasses of starfruit per day - Mrs. P said his weight rose 3 kg in 1 week - 4,2% - Mrs. P says swelling in both legs - Mrs. P said he often felt thirsty and his perceived thirst scale was 7 Objective Data Observasi Tanda Vital : - Blood pressure: 170/66 mmHg - Temperature: 36.6' C - Pulse: 74x/minute - Respiratory rate: 20x/minute - Current weight: 48 kg - Last weight: 45 kg - Dry Body Weight: 45 kg - IDWG : 6.6% Lab Examination Results: - Ureum 154 mg/dL - Kreatinin 9.51 mg/dL - Hemoglobin 8.8 g/dL - Potassium 3.65 mEq/dL
Diagnosis	Hypervolemia associated with impaired regulatory mechanisms (D. 0022)
Intervention	*Sipping Ice Therapy*

Based on the data in table 2. The nursing problem that arises is Hypervolemia related to Disorders of Regulatory Mechanisms in this case study involving 2 subjects who have the same problem, namely excess fluid volume and level of thirst. Subjective data obtained from subject 2 included the patient saying he often felt thirsty, urination was not smooth or even incomplete with the consistency of yellow urine, drank 2-4 glasses/day, body weight increased by 3 kg, there was edema in both lower extremities and the taste scale. The perceived thirst is on a scale of 7 in the (severe) category. Meanwhile, objective data obtained from the patient included observation of vital signs, BP: 170/66 mmHg, S: 36'6 C, N: 74x/minute, RR: 20x/minute, current weight is 48 kg while previous weight was 45 kg where there is weight gain in the patient. The diagnosis was supported by supporting data IDWG:

6.6% and laboratory examination results: Ureum: 154 mg/dL, Creatinine: 9.51 mg/dL, Hemoglobin: 8.8 g/dL, Potassium: 3.65 mEq/dL.

The intervention given to subject 2 was giving *Sipping Ice Therapy* To reduce the patient's thirst, the patient sucks ice cubes for 10 minutes. Thirst level assessment uses VAS and is carried out before and after the intervention to determine the effectiveness of the therapy carried out. From the data measuring the level of thirst of subject 2 using *sipping ice therapy* was before the therapy was given the perceived taste scale of 7 with the category (heavy) after being given the therapy there was a decrease in thirst to a scale of 3 with the category (light).

Based on the intervention carried out, there were differences in the scale of decreasing thirst for the intervention applied to the two patients, where both patients experienced a decrease in the scale of thirst after the intervention. The scale of thirst felt by patients with sipping ice therapy intervention is considered more effective as evidenced by the different levels of the thirst scale, the water content in ice cubes really helps provide a cooling effect and can be refreshing and able to overcome thirst in patients undergoing hemodialysis.

DISCUSSION

Based on the results of the assessment of the two patients who had several differences in signs and symptoms of CKD stage V. In the patient Mrs. S experienced signs and symptoms that were found including a history of hypertension and had been undergoing hemodialysis therapy for 3 years, experienced a weight gain of 1 kg and urinated incompletely or incessantly and complained of frequently feeling thirsty on a scale of 6 supported by supporting examination of urea 143 mg/dL and creatinine 7.30 mg/dL. Meanwhile, the patient Mrs. P found signs and symptoms including a history of hypertension and had been undergoing hemodialysis therapy for 2 years, experienced a weight gain of 3 kg, urinated often incompletely and had swelling in the lower extremities and complained of frequently feeling thirsty on a scale of 7 which was also supported by supporting examinations. urea 154 mg/dL and creatinine 9.51.

The risk factor that occurs in chronic kidney disease in both patients is having a history of hypertension, which is a very important risk factor in the development of chronic kidney failure, increased RAAS (Renin-Angiotensin-Aldosterone System), which is one of the main pathways involved in the homeostatic regulation of body fluids and blood pressure. with this condition, chronic kidney disease occurs excessive activation of this system, especially in response to kidney damage or a decrease in blood to the kidney organs. The cause is an increase in the production of angiotensin II which has a vasoconstrictor effect and causes salt and water retention. Salt and water retention increases the volume of fluid in circulation which in turn causes an increase in blood pressure and contributes to further kidney damage (Rahayu & Sukraeny, 2021).

Chronic kidney disease sufferers undergoing hemodialysis are required to adhere to a fluid-restricted diet during hemodialysis. This fluid restriction can cause several effects on the body, such as complaints of thirst and dry mouth (Handayani et al., 2023). It is known that the results of the study were obtained from the patient Mrs. S has a thirst level of 6 in the

moderate category, while Mrs. P has a thirst level of 7 in the severe category. The second measurement of the thirst level scale was carried out before and after the intervention was carried out. This procedure was carried out between two dialysis sessions. The measurement of the thirst scale used the Visual Analog Scale (VAS) with a scale range of 0-10. The interpretation of the VAS measurement is a value of 1-3 light thirst, 4-6 moderate thirst and 7-10 severe thirst. This instrument has been used in several previous studies to measure the thirst scale and has carried out reliability tests on the instrument and the VAS results are declared reliable for measuring thirst with a Cronbach's alpha coefficient of 0.96 (Siska et al., 2023).

Based on the results of the study obtained from Mrs. S and Mrs. The diagnosis that emerges is hypervolemia related to impaired regulatory mechanisms. Signs and symptoms obtained by Mrs. S includes a history of hypertension and has been undergoing hemodialysis therapy for 3 years, has experienced a weight gain of 1 kg and urinated incompletely and complained of frequently feeling thirsty on a scale of 6 supported by supporting examinations for urea of 143 mg/dL and creatinine of 7.30 mg/dL. Meanwhile, Mrs. P found signs and symptoms including a history of hypertension and had been undergoing hemodialysis therapy for 2 years, experienced a weight gain of 3 kg, urinated often incompletely and had swelling in the lower extremities and complained of frequently feeling thirsty on a scale of 7 which was also supported by supporting examinations. urea 154 mg/dL and creatinine 9.51.

Based on the data described in accordance with the Indonesian Nursing Diagnosis Standards (SDKI), researchers established the main diagnosis, namely hypervolemia related to impaired regulatory mechanisms. This is supported by Siska B's research. One of the nursing problems that occurs in chronic kidney disease patients is excess fluid volume (Hypervolemia) which is caused by impaired kidney function. As a result of decreasing kidney function, there will be a buildup of metabolic waste and fluids in the body. This condition will cause several problems such as edema, difficulty sleeping and urinating more frequently (IDHS, 2017).

Excess fluid or hypervolemia in hemodialysis patients is one of the nursing diagnoses that results in an increase in intravascular, interstitial and intracellular volume (Al Falah et al., 2024). Chronic damage to the kidneys can physiologically cause disturbances in circulatory balance and vasomotor regulation, where at first there are certain initial signs and symptoms which may only be known through increased levels of creatinine in the serum, the discovery of protein in the serum and resulting in the accumulation of excessive fluid volume (Hasibuan & Hati , 2021).

Nursing intervention planning is based on the data that has been obtained for both patients referring to the Indonesian Nursing Intervention Standards (SIKI) book. Nursing planning has been adjusted to the expected outcome criteria. Nursing planning with a diagnosis of hypervolemia is related to failure of regulatory mechanisms, namely management of hypervolemia. The aim of diagnostic planning is that after 1x5 hours of nursing care, it is hoped that the patient will be able to improve fluid balance with the outcome criteria, namely fluid intake, dehydration, blood pressure and body weight.

The nursing intervention plan for dealing with excess fluid volume by managing hypervolemia is to check for signs and symptoms of hypervolemia, monitor hemodynamic

status, monitor fluid intake and output, limit fluid and salt intake, elevate the head of the bed 30-40 degrees, recommend reporting if urine output is <0 .5 mL/kg/hour over 6 hours, recommend fluid restriction and collaboration with diuretics, if necessary.

Nursing diagnosis based on the case of the patient Mrs. S was given an intervention to chew gum for 10 minutes which aimed to reduce the intensity of thirst felt by the patient during hemodialysis therapy. In practice, patients want to limit fluids by chewing gum. This intervention is carried out before the patient undergoes hemolysis. Before intervening with a patient, the first thing to do is explain the procedure and the purpose of the action to be carried out. Then measure the thirst scale before chewing gum. After that, do the chewing gum intervention for 10 minutes on HD. After the intervention, the patient carried out an evaluation measuring the thirst scale. During the evaluation, there was a decrease in the thirst felt by the patient, where before the intervention was given the thirst felt was on a scale of 6 moderate and after the intervention the thirst decreased to a scale of 3 light. In research conducted by Hasibuan & Yati, it was stated that there was a change in thirst after giving chewing gum, where respondents who were originally patients with chronic kidney failure who were undergoing hemodialysis felt very thirsty, but after the intervention, patients with chronic kidney failure who were undergoing hemodialysis felt thirsty. mild or where the patient previously felt thirsty which has changed to mild thirst (Ardika & Veronika, 2021). This is also supported by research conducted by Ardika & Veronika on the effect of chewing gum on thirst in patients undergoing hemodialysis, where the thirst in the group given the chewing gum intervention before the intervention felt thirst was in the thirst category. severe and after the intervention there was a decrease in thirst which was in the light thirst category (Pebrianti et al., 2023). And the group that was not given intervention did not reduce their thirst and remained in the severe thirst category. Other research also states that chewing gum shows that chewing gum results in a large reduction in thirst until it becomes light, so this has a significant impact on thirst in patients undergoing hemodialysis (Dewi & Mustofa, 2021).

Nursing diagnosis for patient Mrs. P carried out a shipping ice/sucking ice cubes intervention where the intervention was considered effective in reducing the thirst felt in patients undergoing hemodialysis. Sipping ice/swallowing ice cubes is one of the independent nursing interventions to reduce the amount of fluid and/or limit daily fluid intake. In practice, patients are willing to carry out the intervention of chewing ice cubes for 10 minutes on HD. Before giving the intervention, suck ice cubes, explain the purpose and procedure of the action to be carried out to the patient, then measure the scale of thirst felt before carrying out the intervention. Next, an ice cube chewing intervention was carried out for 10 minutes on HD. After that, re-evaluate the thirst scale after being given the ice cube chewing intervention. During the evaluation, there was a decrease in the thirst felt by the patient, where the thirst felt initially was on a scale of 7 in the severe category, decreasing to a scale of 3 in the light category. In research conducted by Dewi & Mustofa, it was explained that in cases with chronic kidney failure patients with a nursing diagnosis of hypervolemia, the application of evidence-based nursing, sucking ice cubes, was proven to be effective as a management of hypervolemia which was able to reduce the intensity of thirst felt in patients undergoing hemodialysis, so that intake fluids can be minimized in cases where there is a decrease in the intensity of thirst, which goes down from moderate thirst to light thirst (Lestari

& Hidayti, 2022). This is also supported by research conducted by Lestari & Hifayati explaining that one of the main nursing actions is limiting fluids, the effect of limiting fluids is that the patient will feel thirsty so the nurse's action to reduce thirst without adding fluids to the body is to suck ice cubes for 10 minutes. The evaluation of this action is that there is a decrease in thirst and the action of chewing stones is considered effective in reducing thirst in patients undergoing dialysis (Novela et al., 2024). Other research also explains that giving zam-zam water sucking cubes can have an effect in reducing the level of thirst in patients with chronic kidney failure by giving ice cubes which provide a refreshing taste and make the mouth less dry (Aisara et al., 2018).

Implementation was carried out on two patients, namely Mrs. S and Mrs. P corresponds to the nursing intervention that has been carried out with 2 different interventions: chewing gum and sipping ice therapy with the same aim, namely reducing the intensity of thirst felt in patients who are undergoing hemodialysis. Nursing implementation carried out on October 18 2023 at 09.00 for patient 1 Mrs. S with the results obtained before and after the gum chewing intervention, namely a decrease in the intensity of thirst, before the intervention, the thirst scale was 6 in the moderate category and after the intervention, there was a decrease in thirst with a scale of 4, moderate. Nursing implementation carried out on October 19 2023 at 09.00 for patient 2 Mrs. P with the results obtained before and after the sipping ice therapy intervention, namely a decrease in the intensity of thirst, before the intervention the thirst scale was 7 in the heavy category and after the intervention there was a decrease in thirst with a scale of 3 light. After carrying out nursing procedures for 1x5 hours, Mrs. S experienced a decrease in the thirst scale from moderate 6 to mild 3, while Mrs. P experienced a decrease in his thirst scale from 7 heavy to 3 light.

Chronic Kidney Disease sufferers who undergo hemodialysis must comply with diet, take medication, limit activity, hemodialysis process and limit fluids. Restricting fluids during hemodialysis can cause several effects on the body, one of the effects that arises is complaints of feeling thirsty and dry mouth as a result of reduced salivary gland production (Dasuki & Basok, 2019)). Patients who usually undergo hemodialysis twice a week with a duration of 3 to 5 hours for each hemodialysis patient, which means that when the patient does not undergo hemodialysis, they will experience a buildup of fluid in the body. To prevent overhydration, patients must still limit fluid intake on days when and when not undergoing hemodialysis. As a result of limiting fluids, patients will feel thirsty. There are various ways to overcome the thirst felt by patients, namely by sucking ice cubes, chewing gum, gargling with water, brushing teeth and using frozen fruit. Some of these interventions are considered effective. in reducing the intensity of thirst felt in patients who are undergoing hemodialysis or who are limiting fluid intake (Sujudi et al., 2014).

Based on patient evaluation, 1 Mrs. S with the results obtained before and after the chewing gum intervention, namely a decrease in the intensity of thirst, before the intervention, the thirst scale was 6 in the moderate category and after the intervention, there was a decrease in thirst with a scale of 3, light chewing gum. Patient 2 Mrs. P Based on the implementation of nursing carried out for 1x5 hours, Mrs. P experienced a decrease in his thirst scale from a severe scale of 7 to a mild scale of 3 with sipping ice therapy.

There was a difference in the scale of decreasing thirst for the intervention applied to the two patients, where both patients experienced a decrease in the scale of thirst after the intervention. The scale of thirst felt by patients with sipping ice therapy intervention is considered more effective as evidenced by the different levels of the thirst scale, the water content in ice cubes really helps provide a cooling effect and can be refreshing and able to overcome thirst in patients undergoing hemodialysis. The ice cubes will make the mucosa in the mouth moist after the ice cubes melt so that the patient's mouth does not dry out which can cause a feeling of thirst. The feeling of thirst is also reduced because the water from the ice melts so it can wet the esophagus and then cause the osmoreceptors to channel the fluid needed to the hypothalamus. the body has been fulfilled and then the feedback from this condition is reduced thirst (Dewi & Mustofa, 2021). Previous research shows that there is an effect of giving frozen fruit on reducing complaints of thirst in those undergoing fluid restriction. The water contained in ice cubes provides a cooling effect that can refresh and overcome the thirst of patients undergoing hemodialysis (Dasuki & Basok, 2019). In research conducted by Jundiah, it was stated that low-sugar chewing gum can reduce thirst because it increases saliva secretion through the mechanical and chemical processes of chewing gum. Low-sugar chewing gum can reduce xerostomia by increasing the pH of saliva (Nurhayati, 2022). Various studies show that thirst management interventions can be carried out in various ways, namely by sucking ice cubes, gargling with plain water, brushing teeth, gargling with mouthwash, chewing mint gum or low-sugar gum (xylitol) and using frozen fruit. frozen (Rantepadang & Tabenu, 2019).

CONCLUSION

The analysis of nursing care for chronic kidney disease patients undergoing hemodialysis at the Hemodialysis Unit of DR. Soeradji Tirtonegoro General Hospital, Klaten, revealed significant findings regarding the reduction of thirst intensity. Both patients exhibited signs of hypervolemia, such as weight gain, reduced urine output, and swelling in the lower extremities. The nursing diagnosis for both patients was identified as hypervolemia related to impaired regulatory mechanisms. The care plan focused on fluid balance management, with interventions including independent nursing actions—chewing gum for Patient S and sipping ice therapy for Patient P. Evaluation results indicated that both interventions effectively reduced thirst intensity, with Patient S's thirst scale decreasing from moderate (scale 6) to moderate (scale 4) and Patient P's from severe (scale 7) to mild (scale 3). These findings highlight the potential of tailored nursing interventions in reducing thirst among hypervolemic patients undergoing hemodialysis.

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