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Research/Review

The Effect of Sucking Ice Cubes on Reducing Thirst in CKD Patients at Sentra Medika Cisalak Hospital

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Abstract: Chronic kidney disease (CKD) can be defined as an irreversible impairment of kidney function, where the kidneys' ability to regulate electrolytes, fluid balance, and metabolism declines, resulting in uremia. Fluid restriction in patients with chronic kidney disease increases the frequency of thirst. The increase in plasma sodium concentration causes intracellular dehydration in the thirst center, thereby stimulating the sensation of thirst.This study aims to determine the effect of sucking ice cubes on thirst in chronic kidney disease patients at Sentra Medika Cisalak Hospital. This study uses a one-group pre-post test design. The population was taken using total sampling of 72 patients with chronic kidney disease who received the intervention of sucking ice cubes to reduce thirst. The data collected were thirst scale data before and after sucking on ice cubes. The bivariate analysis conducted was using the paired sample t-test. From the research findings, it can be concluded that there is a significant influence between sucking ice cubes and the thirst scale in patients with chronic kidney disease with p= 0.000. Conclusion sucking on ice cubes can reduce thirst in patients with chronic kidney disease.

Keywords: Chronic Kidney Disease; Fluid Restriction**;** Ice Cubes**;** Pre-post Test**;** Thirst.

1. Introduction

Chronic kidney disease is a complex disease with multiple underlying causes. Due to the high cost of treatment and its far-reaching impact on the health and well-being of people with kidney disease, the 2023 ISN-GKHA (National Kidney Disease Assessment) indicates that the global burden of kidney failure remains substantial. Patients with chronic kidney disease require hemodialysis or a kidney transplant to survive. By increasing independence, renal replacement therapy cannot prolong life, but it can improve their quality of life. Although treatment does not cure or reverse kidney disease, hemodialysis helps patients with chronic kidney disease live longer (Wiliyanarti & Muhith, 2019).

There were 850 million people worldwide with chronic kidney disease (CKD) in 2023, according to the ISN-GKHA (Global Kidney Health Atlas). Approximately 10.4% of men and 11.8% of women were in this group. An estimated 434.3 million adults in Asia had CKD, although there are significant differences in this condition. China and India had the highest number of chronic kidney disease (CKD) sufferers, reaching 159.8 million and 140.2 million, respectively, or 69.1% of the total adult CKD population in the region. According to the Indonesian Health Survey (SKI, 2023), the prevalence of CKD based on doctor's

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diagnosis in the population aged ≧15 years by province was 0.18% or 638,178 sufferers, while in West Java Province alone it was 0.20% or 114,619 sufferers.

Medical records at Sentra Medika Cisalak Hospital show that, with an average of 72 patient visits per month, the prevalence of chronic kidney failure is increasing by 0.3% per month. Data from October to December 2024 shows 217 patients with chronic kidney failure being treated at Sentra Medika Cisalak Hospital, demonstrating this.

Many patients report sucking on ice cubes as a common technique to reduce thirst without increasing fluid intake. Ice cubes are believed to help patients regulate their fluid intake by slowing the hydration process and providing a cool, refreshing sensation. Therefore, many people with kidney failure must monitor their diet, take medications, and limit their fluid intake.

Patients with chronic kidney failure may feel thirsty when their fluid intake is restricted because their salivary glands are unable to produce enough fluid to keep their mouths moist. The patient's subjective sense of thirst is a clear indicator of changes in physical, mental, and social functioning. Control of body fluid balance is closely related to thirst.

Based on research conducted by Rezka et al. (2023), it was found that ice cube suction therapy was effective in minimizing thirst in patients with chronic kidney failure undergoing hemodialysis. After two weeks of intervention and implementation, the patients' thirst decreased from moderate (scale 6) to mild (scale 1).

Based on observations conducted by researchers of 10 respondents with chronic kidney failure, 8 reported experiencing intense thirst, while 2 reported moderate thirst. This is due to their restricted fluid intake due to their salivary glands being unable to produce enough fluid to keep their mouths moist. Patients' subjective thirst is a clear indicator of changes in physical, mental, and social functioning. Control of body fluid balance is closely related to thirst.

Based on the above phenomenon, researchers are interested in conducting research on the effect of sucking ice cubes on reducing thirst in chronic kidney failure patients in the inpatient ward of Sentra Medika Cisalak Hospital.

2. Materials and Method

The type of research used is quantitative. In this study, the researcher applied a quasi-experimental research design with a one-group pre-post test design approach.Sugiyono (2019) explains that experimental research has the form of One Group Pretest-Posttest, which is an experimental design using one sample group and measuring before and after receiving treatment in the sample.

Population, according to Sugiono, is a generalization group that has several items and attributes that are used for analysis and drawing conclusions.In this study, researchers found the number of patient populations with Kidney Failure disease in the period October–December 2024at Sentra Medika Cisalak Hospital, namely217Patients. On average, 72 patients with chronic kidney failure visit Sentra Medika Cisalak Hospital per month.Sugiyono explained that a sample is a measurement and composition of a population. Researchers can apply a sample selected from a larger population if they cannot examine the entire population, for whatever reason—for example, due to a lack of resources, personnel, or time. The sample size in this study was 72 respondents.This research was conducted over a period of approximately

1 month from January 2, 2025 to January 31, 2025. This research was conducted in the Adult Inpatient Ward of Sentra Medika Cisalak Hospital.

The instrument used was an observation sheet containing respondent data and thirst range using the Visual Analog Scale (VAS) for Assessment of Thirst Intensity. This VAS instrument contains a numerical scale of 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 where 0 is for "not thirsty", 1, 2, 3 for "mild thirst", 4, 5, 6 for "moderate thirst", and 7, 8, 9, 10 for "severe thirst". The interpretation of the results of this instrument is that the patient says thirst according to the existing scale level. This ice cube sucking was carried out on respondents for 1 meeting with a duration of 10 minutes. After the intervention, respondents then completed the post-test using the same tool, namely the VAS.

The method used to test the normality of this study is the Kolmogorov-Smirnov test, because this method is effective for samples > 50. The criteria for decision making are: if the significance value > 0.05, the data is considered normally distributed. Meanwhile, if the significance value < 0.05, the data is considered not normally distributed.

Before conducting data analysis, researchers carry out data processing processes including editing, coding, cleaning, processing and data tabulation.

Univariate analysis is a technique used to describe the characteristics of a single research variable independently. Univariate analysis was used to assess the frequency distribution and reduction in thirst in patients with chronic kidney disease in the Inpatient Ward of Sentra Medika Hospital, Cisalak, before and after the ice cube sucking intervention.

Bivariate analysis is a statistical technique used to determine the influence between two variables by looking at the correlation value between the variables (Hair et al, 2010). In this study, because the normality test obtained results with a normal distribution, namely a significance value > 0.05, then adjusting to the data and measurement scale, the bivariate analysis was conducted using a paired sample two-mean difference test. The two-mean difference test is a statistical test that compares the means of two data groups. The two data groups are said to be dependent or paired if the data groups being compared are interdependent (the data after depends on the data before).

3. Results and Discussion

Results

Univariate Analysis

In accordance with theThe research that has been implemented obtained the results of the frequency distribution of respondent characteristics according to age and gender. As for the age <30 years old, there was 1 respondent, age 31-40 years old 5 respondents, age 41-50 years old 14 respondents, age 51-60 years old 30 respondents, and age >61 years old 22 respondents. Meanwhile, there were 42 male respondents and 30 female respondents. The results are shown in the table below:

Table 1. Frequency distribution of chronic kidney failure patients according to age.

Age	Frequency	(%)
<30 years	1	1%
30-40 years	5	7%
41-50 years	14	19%
51-60 years	30	42%
>61 years	22	31%
Total	72	100%

Table 2. Frequency distribution of chronic kidney failure patients based on gender.

Gender	Frequency	(%)
Man	42	58%
Woman	30	42%
Total	72	100%

ResultsMeasurement of thirst intensity in chronic kidney failure patients before and after ice cube administration. The study found that before the ice cube intervention, thirst decreased in 12 respondents. Meanwhile, thirst did not decrease in 60 respondents. This is shown in Table 3.

Table 3. Distribution of frequency of decreased thirst before administering the ice cube sucking intervention.

Thirst (Pre)	Frequency	(%)
There is a decrease in thirst	12	17%
There is no decrease in thirst	60	83%
Total	72	100%

After the ice cube sucking intervention, 57 respondents experienced a decrease in thirst, while 14 respondents did not experience a decrease in thirst. The data obtained are shown in Table 4.

Table 4. Distribution of frequency of decreased thirst after administering the ice cube sucking intervention.

Thirst (Post)	Frequency	(%)
There is a decrease in thirst	58	80%
There is no decrease in thirst	14	20%
Total	72	100%

Bivariate Analysis

This study's bivariate analysis employed a paired sample t-test, which was useful for determining whether or not sucking ice cubes reduced thirst in patients with chronic kidney failure. The paired sample t-test results are shown in Table 6.

Table 5. Kolmogorov Smirnov Normality Test.

		Unstandardized Residual
N		72
Normal Parameters	Mean	0.0000000
	Standard Deviation	0.86766971
Most Extreme Differences	Absolute	0.130
	Positive	0.073
	Negative	-0.130
Kolmogorov- Smirnov Z		1.104
Asymp. Sig. (2-tailed)		0.175

Based on the results of the paired samples t-test in table 5.6 below, the following conclusions can be drawn:

a. According to the output in SPSS, it can be seen that Sig. (2-tailed) is 0.000. Because the Sig. (2-tailed) score of 0.000 < 0.05, there is a significant difference between the thirst scale in the pre-intervention and post-intervention data.
b. Based on the existing output, the t-count result was 19.335, while the t-table for df 71 was 1.996. Therefore, it can be concluded that the t-count > t-table, so Ha is accepted. This can be interpreted as there is an effect of sucking on fresh ice on thirst.

Therefore, it can be concluded that H0 is rejected and Ha is accepted. There is a difference between the scale of thirst in respondents before and after the intervention, namely sucking ice cubes.

Table 6. Effect of Sucking Ice Cubes on Thirst Intensity
(Paired Sample T-test)

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% CI of the Differences Lower	Upper			
Pre Intervensi - Post Intervensi	2.05556	0.90209	0.10631	1.84357	2.26754	19.335	71	0.000

Discussion

Age affects a person's comprehension and mindset, the older a person is, the more their comprehension and mindset develop, so that the knowledge they acquire is better (Jaya, TYP and Sartika, A 2021). In accordance with research conducted by Arfany (2014), the study stated that the majority of respondents who participated in the study were aged 21-49 years, totaling 5 people (20.8%), while in the age range of 41-60 years there were 16 people (66.7%). And at the age of over 65 years there were 3 people (12.5%). Milnawati (2019) stated that the number of functional nephrons in the body usually decreases by about 10% every ten years after a person reaches the age of 40. As a result, the number of functional nephrons decreases by up to 40% at the age of 80. According to researchers, many respondents

experience chronic kidney failure in the age range <30 to 61 years due to the patient's lifestyle which can unknowingly increase the risk of kidney failure.

The number of active male smokers has a greater risk than non-smokers. Smoking has the effect of increasing sympathetic stimulation, which will result in increased blood pressure, tachycardia, and the accumulation of catecholamines in the circulation. This is in line with the opinion of Levei (2010) and Toufii Urraahman (2018) that men are more susceptible to kidney disorders than women (Wahyuni and Elizabeth, 2023). According to researchers, based on the results of interviews with respondents, this is due to a lifestyle that does not maintain a healthy lifestyle. Among them, many men of productive age between 30-50 years old often drink ready-to-drink drinks that are high in sugar and packaged foods that contain a lot of salt in each package. Furthermore, many men often hold urine and do not drink enough water, which can increase the risk of kidney failure.

When patients suck on ice cubes, the ice cubes will melt and create a cool and refreshing effect in the mouth, thereby reducing the complaint of thirst experienced by patients. In addition, melted ice cubes can also moisturize the oral mucosa (Igbokwe and Obika, 2008). According to the results of research implemented by Dasuki and Buhari (2018), the majority of patients (64.6%) in the intervention group experienced moderate thirst before receiving the Slimber Ice sucking treatment, while the majority of patients (66.6%) experienced mild thirst intensity after the intervention. Where, the results of the study in the control group before receiving health education, the majority (64.7%) of patients had moderate thirst, then after receiving health education regarding fluid restriction and the concept of thirst management decreased (73.6%) or remained at moderate thirst intensity. According to researchers, sucking on ice cubes can reduce thirst because sucking on ice cubes can refresh the mouth and provide a cooling sensation so that thirst is reduced.

Physiologically, thirst can occur 30-60 minutes after drinking water. If no fluid intake occurs, plasma osmotic pressure increases and extracellular fluid volume decreases. This decrease in extracellular fluid volume results in decreased blood perfusion to the kidneys, which activates renin, angiotensin, and aldosterone. Angiotensin II works to increase intravascular volume by stimulating thirst in the hypothalamus, causing the patient to feel the urge to drink (Sherwood, 2012).

Research conducted by Nurhayati et al. (2022) concluded that there is a difference between sucking ice cubes and chewing gum in reducing thirst in patients with kidney failure. This was achieved with a p-value of 0.008 for chewing gum and a p-value of 0.000 for sucking ice cubes. Therefore, the study above shows that sucking ice cubes is more effective in reducing thirst in patients with chronic kidney failure.

According to researchers, sucking on ice cubes can reduce thirst in patients with chronic kidney failure, with or without hemodialysis. The melting ice cubes and the resulting cooling sensation in the mouth can provide a refreshing and soothing effect. Furthermore, sucking on ice cubes can moisturize the oral mucosa, preventing dryness, which can lead to thirst.

4. Conclusion

Based on the results of research conducted with several tests, it can be concluded:The average thirst scale before the ice cube sucking intervention was 7.5278. Meanwhile, the average thirst scale after the new ice cube sucking intervention was 5.4722.There is an effect between sucking ice cubes and reducing thirst in kidney failure patients at Sentra Medika Cisalak Hospital.Sucking on ice cubes can be an effective alternative to reduce thirst in patients with chronic kidney failure.

Suggestion

1. For Respondents
   It is hoped that it can provide information and understanding about the effect of sucking ice cubes on reducing thirst in chronic kidney failure patients so that patients with chronic kidney failure can overcome thirst by replacing using sucking ice cubes.
2. For Hospitals
   It is hoped that Agas Hospital will always provide health education to increase knowledge for patients and their families in maintaining the health of chronic kidney failure patients.
3. For Educational Institutions
   It is hoped that institutions can provide more references and can apply research results as new references and considerations for further research.
4. For Further Researchers
   It is hoped that further research can conduct better research than previous research with different variables so that this research can be perfected.

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