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Thirst Management among Patients with Hemodialysis by Sucking Ice Cubes: A Literature Review

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Abstract

Thirst is the most common symptom burden among patients with hemodialysis. Thirst among patients with hemodialysis caused by fluid restriction lead to stress and depression, especially among patients who consume diuretics. This study aims to analyze the benefit of sucking ice cubes among patients with hemodialysis according to empirical studies in the last ten years. The articles were obtained from several databases such as Scopus, ProQuest, Google Scholar, ScienceDirect, and the National Library of Indonesia. There were five articles reviewed by the authors. According to the five articles, ice cubes effectively reduce thirst among patients with hemodialysis. Patients with hemodialysis can suck the ice cubes maximum of three to four times a day. Sucking the ice cubes can reduce thirst because it has a cold effect which can freshen and reduce the thirst longer. Nurses can provide and educate this alternative intervention which is effective to reduce thirst among patients with hemodialysis. Sucking the ice cubes can be conducted by the patients in the hospital also in the patient's home with the family's help.

Keywords: Ice Cubes; Hemodialysis; Thirst Management

Background

Patients with hemodialysis commonly have several symptoms such as thirst, nausea, vomiting, anorexia, anemia, skin problem, psychological problem, insomnia, hypertension, etc. (Saraswati et al., 2019). Thirst is the most common problem caused by fluid restriction which leads to a decrease in oral intake. Thirst among patients with hemodialysis must be overcome because it leads to the psychological problem such as depression (Fajri et al., 2020; Saraswati et al., 2019).

Patients undergoing hemodialysis who experienced thirst face difficulties to control fluid restriction. If the patients failed to control the fluid restriction, it will generate several problems such as shortness of breath, swelling in the hands and feet, and ascites. Thus, it is very important to manage thirst among this population. Reference

Previous studies reported the effectiveness of the suck of ice cubes among patients with hemodialysis to prevent thirst. By sucking the ice cubes, patients experienced a cold sensation from the melting of ice cubes in the mouth (Isrofah et al., 2019). Dasuki and Basok (2019) reported that the patients who suck the ice cubes can reduce the intensity of their thirst and minimize the risk of fluid excess in the body.

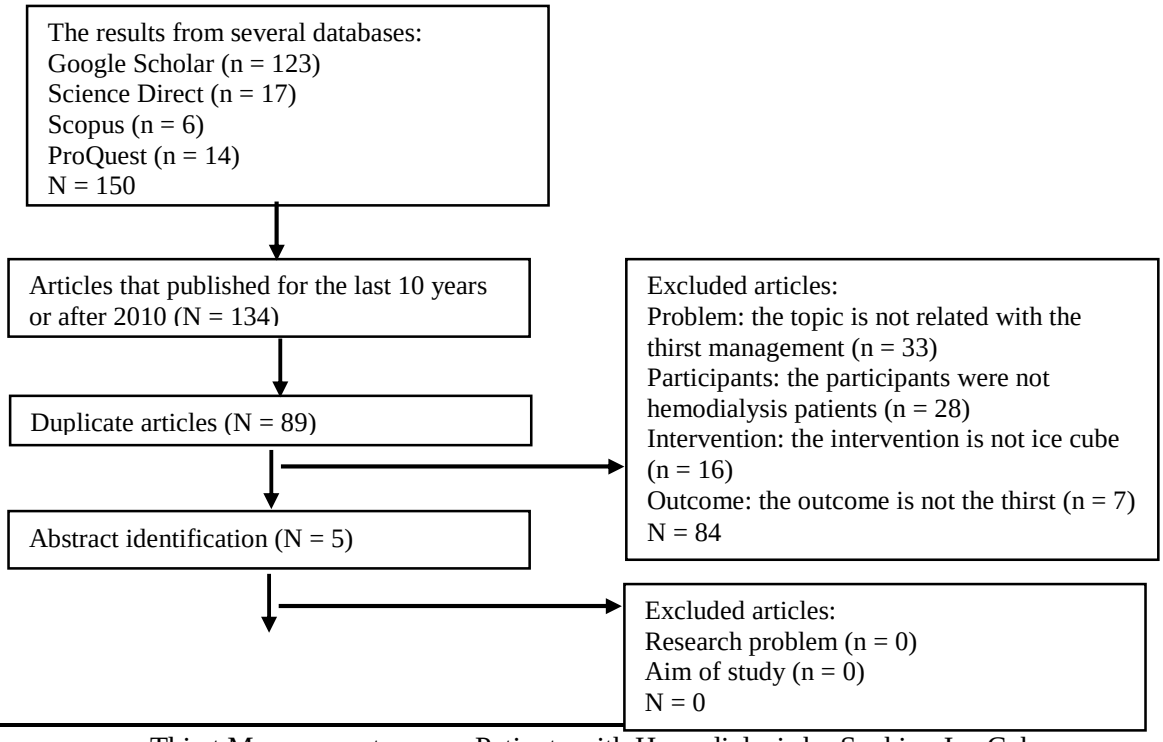
According to the data from the Indonesian Renal Registry (2018), the number of patients with hemodialysis in Indonesia is up to 132.142. Most of the patients were aged 45 years old to 64 years old, and most of the patients were the man. The percentage of the male patients was 57% and the woman was 43%. The number of patients with hemodialysis in Indonesia was increased every year. Because of the increasing number of patients with hemodialysis in Indonesia and the lack of knowledge to manage thirst by sucking the ice cubes, thus do a literature review about how to control the thirst by using the ice cubes is very important to find the best way to manage the thirst and prevent the complications of thirst.

Methods

A search was made by using several electronic literature databases such as Google Scholar, Science Direct, Scopus, and ProQuest with PICOS framework searching strategy. The search keywords were "thirst management", "ice cubes" and "hemodialysis". All searches were conducted from 14 February 2021 to 20 March 2021. There are several inclusion and exclusion criteria applied such as the journal must be national or international journal which the population was hemodialysis patients, the intervention must be sucking ice cubes, the outcome of the research was the effect of ice cube to thirst, the study design was not literature review or systematic review, the literature was limited to articles that published after 2010 to 2020 by using English or Indonesian language.

The search with the keywords in Google Scholar, Science Direct, Scopus, and ProQuest resulted in 123, 17, 6, 14 articles, respectively. After reading the articles, several articles were excluded because it published before 2010. Thus, the articles were 134 in total. The researcher continued to exclude the articles for the following reasons: duplicate articles (n = 89), the topic is not related to thirst management (n = 33), the participants were not hemodialysis patients (n = 28), the intervention is not ice cube (n = 16), the outcome is not the thirst (n = 7). A total of 5 articles were eligible for analysis.

Scheme 1. The Articles Review Flow



Eligible articles for analysis (N = 5)

Results

Table 1. The list of 5 Articles

No	Writer	Year	Vol	Title	Methods (Design, Subject, Variable, Instrument, Analysis)	Results	Databases
1.	Yunie Armiyati, Khoiriyah, Ahmad Mustofa	2019	Vol. 2 No. 1	Optimizing of thirst management on CKD patients undergoing hemodialysis by sipping ice cubes	D: Quasi Experiment S: Hemodialysis patients (n = 27) V: Sucking the ice cubes I: Visual Analog Scale (VAS) A: Paired t-test	44% participants experienced very thirsty before sucking the ice cubes. Meanwhile, after sucking the ice cubes about 10 ml, 55.6% participants decreased thirst. Most of participants can endure the thirst about 93 minutes after the interventions given by the researcher. It concluded that sucking the ice cubes is effective to reduce thirst among patients with hemodialysis.	Google Scholar
2.	Dasuki, Buhari, Basok	2018	-	The effect of sucking the ice on the thirst intensity of chronic kidney disease (CKD) patients undergoing hemodialysis	D: Quasi experiment S: Hemodialysis patients in Raden Mattaher hospital and Abdul Manaf hospital V: Sucking the ice cubes (30 ml) I: Visual Analogue Scale (VAS) for assessment of thirst intensity A: Wilcoxon test	64% participants experienced moderate thirst before sucking the ice cubes. After the intervention given to the patients, the 67.6% participants have light thirst. Sucking the ice cubes decreased the thirst intensity among patients with hemodialysis.	Google Scholar
3.	Noorman Wahyu Arfany, Yunie Armiyati, Muslim Argo Bayu Kusuma	2014	-	The effectivity of chewing low sugar gum and sucking the ice cubes to decrease thirst among CKD patients undergoing hemodialysis in RSUD Tugurejo Semarang	D: Quasi eksperiment, two group, pretest-posttest design S: Hemodialysis patients (n = 17) V: Chewing low sugar gum and sucking the ice cubes I: Did not mention the instrument clearly A: Mann Whitney test	According to the literature, there is significant differences about thirst intensity between the chewing gum's group and sucking ice cube's group. Sucking the ice cube was more effective than chewing low sugar gum (p = 0,006).	Google Scholar
4.	Annisa Nurul Fajri1, Sulastri, Puji Kristini	2020	-	The effect of ice cubes as evidence-based nursing to decrease thirst among patients with hemodialysis	D: Experimental design S: Patients with hemodialysis in Pandan Arang Boyolali hospital (n = 10) V: Sucking the ice cubes I: Dialysis Thirst	The result showed that after the intervention, the thirst intensity decreased about 58% (p 0.000).	Google Scholar

No	Writer	Year	Vol	Title	Methods (Design, Subject, Variable, Instrument, Analysis)	Results	Databases
					Inventory (DTI) A: T test		
5.	Isrofah, Moh.Projo Angkasa, Alpin Amar Ma'ruf	2019	-	The efffect of sipping ice to reduce thirsty feel in chronic kidney disease patients who Have hemodialysis in RSUD Bendan Pekalongan city	D: Pre experiment with the design of one group pre-test post-test. **S:** Hemodialysis patients (n = 36) V: Sucking ice cube I: Visual analog scale score (VAS) A: Mann Whitney test	The result were found to be significantly result, between before and after sucking the ice cube (*p* 0,000). This recommendation from observation is expected that suck an ice cube could be used to manage the thirst of hemodialysis patients.	Google Scholar

The results showed that 1 article was published in 2014, 1 article was published in 2018, 2 articles were published in 2019, and 1 article was published in 2020. The majority of the articles were quasi-experimental designs and used the Visual Analog Scale (VAS) as the instrument of study. For the data analysis, most of the studies used Paired t-test, Mann Whitney test, and Wilcoxon test. All the study results reported that sucking the ice cubes effective to reduce thirst among patients with hemodialysis.

Discussion

Thirst among patients with hemodialysis caused by the restriction of fluid intake. Thirst occurs when the salivary glands fail to provide enough fluids to moisten the mouth. Dryness of the mouth stimulates nerve endings in the mouth, then reported to the thirst center in the lateral hypothalamus near the vasopressin-producing cells. This stimulation will cause a sensation of thirst (Armiyati & Mustofa, 2019). Sheikh & Dehghanmerhr (2018) mentioned that thirst and dry mouth are the most common symptom among patients undergoing hemodialysis. Approximately 68 - 86% of patients with hemodialysis encounter thirst which affects their quality of life, leads to discomfort, and distress. Patients with hemodialysis should apply fluid restrictions to avoid the complications caused by excessive fluids (Lina & Wahyu, 2019).

According to the first article conducted by Arfany et al. (2014), if the patients with hemodialysis suck the ice cubes which contain 10 ml of water, they can endure the thirst for 93 minutes. In addition, by sucking the ice cubes for 5 minutes, the majority of the participants reported the thirst was decreased about 56% from very thirsty to slightly thirsty. There is a significant difference in the level of thirst before and after the intervention. The second article conducted by Dasuki and Basok (2019) and the fourth article conducted by Isrofah et al. (2019) reported that before the intervention given to the patients, the intensity of thirst is moderate. Meanwhile, after the intervention, the thirst intensity declined to light thirst. Furthermore, the third article written by Armiyati and Mustofa (2019) reported that before the intervention the respondents experienced heavy thirst. Whereas, after the intervention the respondents informed don't feel thirsty. The last article from Fajri et al. (2020) showed that before the intervention the participants experienced

sometimes thirst, and after the intervention, the participants don't feel thirsty.

After reviewing the articles, we can conclude that sucking the ice cubes is an effective intervention to decrease the thirst level among patients with hemodialysis. One ice cube contains 10 ml of water, and the patients can suck it for about 5 minutes. Sucking the cube gives a cold sensation which can freshen the patient's mouth. Thus, the patients can hold their thirst longer. Fajri et al. (2020) explained that patients with hemodialysis can suck ice cubes approximately 3 to 4 times a day with a maximum of 10 cubes. Nurses in the hospital can educate the patients and families to apply this intervention.

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