Scoop Review: Management Of Non-Pharmacological Thirst In Hemodialysis Patients

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ABSTRACT

Thirst is defined as a person's awareness of the desire to drink due to the significant loss of fluids. Patients with chronic kidney disease who undergo hemodialysis are prone to thirst due to fluid restrictions. The purpose of this study was to determine the thirst for chronic kidney disease patients undergoing hemodialysis therapy. This research is a descriptive study with a literature review method. The data used in this study are secondary data in the form of journals obtained through searches on various search engines such as EBSCO, Google Scholar, SpringerLink, and Pubmed. The keywords used were "thirst in chronic kidney disease patients", "thirst in hemodialysis patients", and "thirst in hemodialysis patients" The technique used in analyzing data is using a synthesis matrix. The results of this study are 12 journals that are relevant to this study and indexed by SCOPUS and SINTA. The conclusion of this study is that the average thirst rate in chronic kidney disease patients undergoing hemodialysis therapy is in the category of moderate to severe thirst, the factors associated with thirst in chronic kidney disease patients undergoing hemodialysis therapy are dry mouth, body size temperature, and ambient temperature, while thirsty interventions in patients with chronic kidney disease undergoing hemodialysis therapy are the use of straws, sucking ice cubes, gargling, chewing gum low or no sugar and low management of sodium. Future studies can develop a

pilot study or experiment to find interventions to reduce thirst in chronic kidney disease patients undergoing hemodialysis therapy.

Keywords: Chronic Kidney Disease, Hemodialysis, Thirsty Level.

Introduction

Chronic kidney disease, described as renal failure or decreased kidney function and/or a Glomerular Filtration Rate (GFR) of less than 60mL/min/1.73 m2 for 3 months due to progressive and irreversible loss of most nephrons, in which the kidneys are unable to dispose of metabolic waste substances or perform regulatory functions (International Society of Nephrology, 2013). According to the World Health Organization (WHO), the number of chronic kidney disease patients in 2013 has increased by 50% from 2012.(Rantepadang & Taebenu, 2019). The global prevalence of chronic kidney disease is 13.4%(Hill et al., 2016). Advanced CKD patients require renal replacement therapy, one of which is hemodialysis therapy (HD). According to Indonesian Renal Registry (IRR) data for 2017, the number of active HD patients in 2016 increased from 52,835 to 77,892 in 2017, while new patients increased from 25,446 to 30,831 in 2017.(PERNEFRI, 2017).

CKD patients undergoing HD are advised to comply with fluid restrictions. Fluid restriction aims to prevent excess fluid. Excess fluid in CKD patients can cause hypertension, edema, congestive heart failure, and premature death.(Howren et al., 2016). However, many HD patients find it difficult to comply with fluid restrictions. Fluid restriction in CKD patients may cause dry mouth, esophageal mucous membranes, and thirst.(Hall, 2016). Thirst is a physiological response from within the human body in the form of a desire to meet the needs of fluids in the body(Bellomo et al., 2015). The incidence of thirst in CKD patients with HD ranges from 39% to 95%.(Kara, 2013).

The effect of unbearable thirst drives CKD patients to desire to consume more water and causes patients to violate fluid limits (Hall, 2016). Additionally, thirst can lead to dry mouth, oral health problems,

discomfort, and a lower quality of life. (Paredes-Rodríguez et al., 2016).

As insights concerning thirst in CKD patients on hemodialysis require special care, the challenges indicated earlier require early detection. As a result, it is vital to do a scoping review of the literature to learn more about the non-pharmacological management of thirst in patients with chronic kidney disease receiving hemodialysis.

Method

This research is a descriptive quantitative research with a literature review method. The data used in this study is secondary data in the form of journals obtained through searches on various search engines such as Google Scholar, SpringerLink and Science Direct with the keywords thirst in chronic kidney disease patient", "thirst in hemodialysis patient", and "thirst in patients chronic renal failure", "thirst", "adult patients", and "hemodialysis".

The inclusion criteria for the journals to be used are journals to be used in Indonesian or English published in the period 2011-2022, the type of research in the journals to be used is correlation descriptive research, experiments, quasi-experiments, research samples in articles using kidney disease patients chronic patients undergoing hemodialysis therapy as research subjects. The exclusion criteria for this study were articles whose study sample was not chronic kidney disease patients on hemodialysis therapy, pediatric chronic kidney disease patients, critical patients, pharmacological management, and literature review.

The technique used in analyzing the data is using a synthesis matrix. This technique is used to obtain information that is in accordance with the research objectives.

Result

The articles obtained were the results of a search with a screening process according to the inclusion and exclusion criteria. If there is a similarity in the articles, one of the articles from one search engine will be used. The screening process finally resulted in 10 articles that had been selected according to their relevance to this study. Chart 1 below is an illustration of the screening results of the

article search process. Table 1 contains the search results for articles related to the thirst of CKD HD patients. A search using the keywords "thirst hemodialysis adult patient" chronic kidney disease or chronic renal failure or CKD or ESRD" from 2012-2022 via the EBSCO search page yielded 119 articles. Via Springer link, 146 articles. Scopus indexed journal, obtained 126 articles. Through Science Direct Search results obtained 391 articles. A search via Google Scholar using the keywords “thirst” and “hemodialysis” chronic kidney disease patients” resulted in 616 articles. Researchers searched for titles and abstracts from literature relevant to this research.

Chart 1. Article selection process

Articles obtained from search engines based on keywords:				
EBSCO: 119 articles	Springer links: 146 articles	Scopus: 126 articles	Pubmed obtained 2 articles	Google scholar: 616 articles
⇩				
Selection based on the similarity of titles and inclusion criteria				
EBSCO: 0 articles	Springer links: 5 articles	Scopus: 2 article	Pubmed: 1 article	Google scholar: 15 articles
⇩				
Selection based on research objectives and exclusion criteria				
EBSCO: 0 articles	Springer links: 3 articles	Scopus: 1 article	Pubmed: 0 articles	Google scholar: 8 articles
The final selection obtained 12 articles				

Table 1. The results of the article screening process

Author and Year	Title	Journal Name	Journal Qualification
Wei-Feng Fan, Qi Zhang, Li-Hong Luo, Jian-Ying Niu and Yong Gu (2013)	Study on the Clinical Significance and Related Factors of Thirst and Xerostomia in Maintenance Hemodialysis Patients	Kidney Blood Pressure Research	SCOPUS Q2
Belgüzar Kara (2016)	Determinants of thirst distress in patients on hemodialysis	International Urology and Nephrology	SCOPUS Q2

Author and Year	Title	Journal Name	Journal Qualification
Agnieszka Bruzda-Zwiech, Joanna Szczepanska and Rafał Zwiech (2016)	Sodium gradient, xerostomia, thirst and inter-dialytic excessive weight gain: a possible relationship with hyposalivation in patients on maintenance hemodialysis	International Urology and Nephrology	SCOPUS Q2
Dasuki and Buhari Basok (2018)	Effect of Sucking Slimber Ice on Thirst Intensity in Chronic Kidney Failure Patients Undergoing Hemodialysis	Indonesian Journal of Health Science	SINTA 5
Anis Ardiyanti, Yunie Armiyati and M. Syamsul Arif SN (2015)	Effect of Gargling with Mint Flavored Mouthwash on Thirst in Patients with Chronic Kidney Disease Undergoing Hemodialysis at SMC Telogorejo Hospital	Journal of Nursing and Midwifery (JIKK)	SINTA 4
Yunie Armiyati, Khoiriyah and Ahmad Mustafa (2019)	Optimization of Thirst Management on CKD Patients Undergoing Hemodialysis by Sipping Ice Cube	Indonesian Nursing Media	SINTA 3
Noorman Wahyu Arfany, Yunie Armiyati and Muslim Argo Bayu Kusuma (2014)	The Effectiveness of Chewing Low Sugar Gum and Sucking Ice Cubes on Decreased Thirst in Patients with Chronic Kidney Disease Undergoing Hemodialysis at Tugurejo Hospital Semarang	Journal of Nursing and Midwifery (JIKK)	SINTA 4
Lisbet Gurning, Jenny Marlindawani Purba and Cholina Trisa Siregar (2018)	Influence of Low-Sodium Diet Management on Thirst Response in End-Stage Renal Disease Patients with Hemodialysis	Belitung Nursing Journal	SINTA 3
Sadegh dehghanmehr et al (2017)	Investigating the effect of sugar-free candies on the intensity of thirst and dry mouth in patients undergoing hemodialysis	Journal of Pharmaceutical Sciences and Research	SCOPUS Q3
Esti, Yenny, Lorita Yemina (2018)	Description of Thirst in Patients Undergoing Hemodialysis at PGI Cikini Hospital	Cikini Journal of Nursing	SINTA 5

Author and Year	Title	Journal Name	Journal Qualification
Liza Fitri Lina, Haifa Wahyu (2019)	The Effectiveness of Nursing Intervention Innovations Sucking Ice Cubes Against the Thirst Scale of Haemodialysis Patients	Journal of Nursing Muhammadiyah Bengkulu	SINTA 6
Yenny, Yohanes Gamayana Trimawang Aji	Efektifitas Chewing Gum Terhadap Sensasi Rasa Haus dan Interdialytic Weight Gain (IDWG) Pasien Hemodialisis	Syntax Literate: Jurnal Ilmiah Indonesia	Sinta 4

Discussion

Thirst level in patients with chronic kidney disease undergoing hemodialysis therapy. The incidence of thirst in CKD patients with HD ranges from 39% to 95%. This is matching the study's findings, which revealed that 191 (94.1%) of 203 patients were thirsty. (Kara, 2016). The results of other studies show that the intensity of thirst in CKD patients undergoing HD therapy is in the category of moderate to severe thirst, as well as discomfort caused by thirst, the results of this study show the thirst distress of patients in the moderate to severe category. Given the high incidence and intensity of thirst in CKD patients undergoing HD therapy, it is necessary to pay special attention to thirst in providing nursing care to CKD patients undergoing HD therapy.

Factors related to thirst in patients with chronic kidney disease undergoing hemodialysis therapy. Increased plasma sodium concentration can cause intracellular dehydration in the thirst center, thereby stimulating the sensation of thirst(Hall, 2016). However, the results of the study stated that there was a negative relationship between thirst scores and serum sodium concentrations, these results were not in accordance with the theoretical concept. This could be caused by the sodium concentration in the research sample being in the normal category or the lack of variation. It was shown that the average sodium concentration in the study sample was 134.81 ± 3.11 so the results could be different from the

concept.(Kara, 2016). The results of other studies suggest that there is a weak relationship between serum sodium gradient and patient-reported thirstduring post-HD (Munoz Mendoza et al., 2011). There is a lack of other studies that examine the effect of increasing sodium concentration on thirst so they cannot provide further descriptions.

A dry mouth or xerostomia can also increase thirst. Symptoms of dry mouth may be accompanied by hyposalivation or without hyposalivation(Bruzda-Zwiech et al., 2018). The results showed that there was a slight variation in thirst scores between the hyposalivation and non-hyposalivation subgroups. The results of other studies show that the results of the Pearson correlation test show a significant positive relationship between the thirst score and the xerostomia score, this is in accordance with the theoretical concept(Fan et al., 2013). The higher the xerostomia score, the higher the thirst score, so preventing or treating xerostomia can reduce thirst.

There are other factors that affect thirst, namely age, sex and body size, environmental temperature and lifestyle. Based on age, babies, children and the elderly are easier to feel thirsty(Kozier, B. et al., 2010). The results of Fan et al's study stated that there was no correlation between age and thirst(Fan et al., 2013). This could happen due to the insufficient size of the research sample and the lack of variation in age in the research sample, where the average age of the 42 samples in the study was 65.2 ± 10.9 years. In addition, the average age of 65.2 ± 10.9 years indicates that the average sample is elderly. Elderly patients can experience a decrease in the sensation of thirst so that even though the elderly are at risk of dehydration, they are not aware of it and do not report feeling thirsty.

Based on gender, men need more fluids than women because men produce more sweat than women. In addition, individuals who have a higher percentage of body fat tend to have less body fluids, so obese people feel thirsty easily(Kozier, B. et al., 2010). The results showed that thirst scores were higher in female patients and there was no correlation between gender and thirst(Fan et al., 2013). It can happen that women have proportionally

higher body fat than men, so it can cause differences in sex-related results on thirst, but can be related to body weight. The results showed that there was a significant correlation between thirst scores and Body Mass Index, these results are in accordance with the theoretical concept(Kara, 2016). Obese people have less bodily fluid, which is roughly 30% to 40% of their body weight, therefore they require more fluids. Loss of body fluids through sweating will increase when the ambient temperature is high, thereby stimulating individuals to drink(Kozier, B. et al., 2010). The results showed that thirteen patients (30.9%) reported feeling thirsty during the day quite often. Another study reported that patients felt more thirsty than usual in summer (79.1%)(Fan et al., 2013) (Kara, 2016). This is in line with the theoretical concept that when the ambient temperature is high, thirst will also be higher, causing more fluid intake to be needed due to excess fluid expenditure through sweat and increased respiration so that it is easy to feel thirsty.

Intervention of thirst in patients with chronic kidney disease undergoing hemodialysis therapy. Thirst usually goes away soon after drinking a small amount of fluids. After drinking, a person may be free from thirst for a while even before the liquid drunk is absorbed by the digestive system. This is in accordance with research related to the use of a 3 mm diameter straw when drinking, where patients are instructed to drink a small amount of liquid when they feel thirsty. There is an effect of using a straw with thirst intensity(Fan et al., 2013). The use of a straw can be done to quench thirst but still maintain fluid restrictions because using a small drinking device can control fluid intake little by little.

Sucking ice cubes can also be used as a substitute for water to reduce thirst. Melted ice cubes can wet the mouth and lining of the esophagus and enter the digestive system so that they can reduce thirst. This is in accordance with the results of the study which stated that there was a decrease in the intensity of thirst in the intervention group after sucking ice cubes from the moderate to mild category.(Basok et al., 2018). Sucking ice cubes can reduce thirst in patients with chronic kidney failure because it can give a fresher feeling. However, patients with cold-sensitive teeth may choose other interventions.

Thirst in patients with chronic kidney disease is closely related to dryness of the mouth and lining of the esophagus due to uremia. Intervention by stimulating the formation or secretion of saliva makes the mouth wetter, thereby reducing thirst. Chewing gum and gargling can help to relieve thirst by stimulating salivary secretion. This is in accordance with the results of research which states that chewing low-sugar and no-sugar gum can reduce thirst intensity from moderate to light by 20%.(Arfany et al., 2014; Bossola & Tazza, 2012). A study in Indonesia also found the effectiveness of chewing gum on the sensation of thirst and IDWG in hemodialysis patients (Yenny Y & Aji YGT, 2021).

In addition, a previous study stated that rinsing with boiled water and gargling with mouthwash can reduce thirst intensity in CKD patients undergoing HD therapy.(Armiyati & Mustofa, 2019). If a person has a sensitivity to mouthwash, gargling with plain water can be done.

Restricting salt consumption can reduce thirst. An increase in sodium salt intake that exceeds the body's needs will result in an increase in plasma osmotic pressure, causing a thirst response. This is in accordance with the results of the study which stated that the intensity of thirst in the control group after the intervention decreased from severe to moderate to mild(Gurning et al., 2018). Some patients have difficulty in implementing low-sodium diet management because of the patient's lack of acceptance of the bland taste in food.

Compliance with low-sodium diet management can be achieved if there is involvement between patients, families (caregivers), and health workers. The results of the comparison of the several interventions obtained the most effective intervention, namely sucking ice cubes compared to other interventions. Sucking ice cubes can reduce thirst more because someone who sucks ice cubes can swallow ice cubes that have melted, so it not only moistens the mouth and lining of the esophagus but also the water can enter the digestive system and be distributed throughout the body, in contrast to interventions in the form of chewing gum and gargling which can only stimulate salivary secretion to moisten the mouth and lining of the esophagus. Although sucking ice cubes is more effective

than other interventions according to the conditions of each patient.

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the findings of this investigation, the average thirst level in patients with chronic kidney disease undergoing hemodialysis therapy is moderate to severe. Conditions that influence thirst in patients with chronic kidney disease undergoing hemodialysis therapy involve dry mouth, body mass, and ambient temperature. Straws, sucking ice cubes, gargling, chewing low or zero-sugar gum, and low-salt management are all possible methods to alleviate thirst in patients with chronic renal disease receiving hemodialysis therapy.

Suggestion

Future research is expected to develop other factors that influence thirst, and compare some interventions to reduce thirst in patients with chronic kidney disease undergoing hemodialysis therapy.

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