How hemodialysis patients manage dietary and fluid intake? A descriptive qualitative study

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Abstract

Background: Managing dietary and fluid intake for hemodialysis patients is crucial, but it is also challenging. Non-compliance to diet and fluid intake restriction may increase a patient's morbidity and mortality. Exploring the experiences of hemodialysis patients who successfully manage those regimens may provide new insight to develop more effective strategies.
Purpose: The study aimed to explore the experiences of hemodialysis patients who successfully manage the dietary and fluid intake restrictions.
Methods: A descriptive qualitative study was applied. Semi–structured interviews were conducted with 15 hemodialysis patients purposively recruited from a hemodialysis unit of a public hospital in West Sumatera, Indonesia. Interviews were transcribed verbatim and thematically analyzed to describe the phenomenon of hemodialysis patients. The study was reported following the COREQ guidelines.
Results: Most participants in this study are female, aged between 38 – 63 years and length of hemodialysis 4 months – 6 years. The finding of this study was that the essential themes that explained how hemodialysis patients adhere to fluid and dietary restrictions are 1) strategies for restricting fluid and dietary intake, 2) motivation to restrict fluid and dietary intake, 3) fear of the effects of non-adherence to fluid and dietary restrictions and 4) social support.
Conclusion: Hemodialysis patients who successfully manage the dietary and fluid intake restriction employed various strategies, including maintaining motivation, facing fear of potential complications, and seeking social support. It is important for healthcare professionals to include those aspects when they provide education to the hemodialysis patients. Further study is warranted to explore the long-term impact of these strategies on patient outcomes and the development of educational programs that incorporate psychological and social support components to improve hemodialysis patients' adherence and quality of life.

Keywords: dietary; fluid; hemodialysis; qualitative study; restriction

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Introduction

Chronic kidney disease (CKD) is a major health problem worldwide. It is considered to have poor health outcomes among most non-communicable diseases, including cardiovascular disease, hypertension, and diabetes (Luyckx et al., 2018). Globally, around 13% of people suffer from CKD, and the mortality rate has been rising, especially in lower-middle-income countries (GBD Chronic Kidney Disease Collaboration, 2020; Hill et al., 2016). Additionally, the number of patients requiring hemodialysis (HD) has been rising over time. In Indonesia, approximately 98% of patients with CKD use hemodialysis as a renal replacement therapy (Indonesian Renal Registry (IRR), 2018).

Hemodialysis patients are responsible for many aspects of their treatment. These components include adhering to dietary and fluid restrictions, taking prescribed medications, and attending hemodialysis sessions (Lambert et al., 2017; Murali et al., 2019; Okoyo Opiyo et al., 2020). Hemodialysis patients are a unique patient population in terms of treatment adherence, since the treatment complexity affects many aspects of their lives. To optimally manage

the disease, along with lifetime behavioral and social readjusting, a comprehensive approach is required to harmonize multiple aspects of dialysis treatment, including medication and fluid and dietary intake (Curtin et al., 2005). Additionally, fluid and dietary restrictions have transformed into a foundation of the majority of hemodialysis patients' lives (Clark-Cutaia et al., 2019). Hemodialysis patients are expected to adhere to therapy regimens (Chironda & Bhengu, 2016; Lin et al., 2017; Naderifar et al., 2019). and as such patient adherence is as fundamental a component of effective healthcare as the treatment regimen itself, while the positive clinical outcome in hemodialysis patients primarily relies on rigorous adherence to therapeutic regimens (Howren et al., 2013).

However, some studies found that many hemodialysis patients have non-adherence to those regimens with between 30% to 60% of individuals undergoing hemodialysis failing to follow recommended intake levels for fluids and salt. The proportion of adherence in this patient population is still under 74% (Howren et al., 2016). Failure to comply with dietary and fluid restrictions may lead to higher morbidity and mortality rate due to accumulation of toxic fluids and end products of metabolism in the blood (Chen et al., 2016).

A number of studies have been conducted in exploring the hemodialysis patients' experiences; however, there has been limited study which explored the experiences of patients who successfully managed fluid and dietary intake. Previous study was unable to show the specific strategies practically applied and how to effectively manage fluid and dietary intake among hemodialysis patients. The lesson learned from these successful experiences would benefit other hemodialysis patients to gain new insight related to an alternative strategy for managing the fluid and diet restriction. Additionally, it also helps health professionals, especially hemodialysis nurses and teams, in developing programs or methods to effectively manage the dietary and fluid intake restriction among hemodialysis patients. The study was aimed to explore hemodialysis patients' experiences in how they successfully manage their fluid and dietary intake restriction.

Materials and Methods

Design and participants

Descriptive qualitative research is a study that seeks to understand the phenomenon of the subject of research, behavior, perception, motivation, action, etc., holistically, and the way of describing the result in the form of words (Moleong, 2016). It generates data that describe the 'who, what, and where of events or experiences' from a subjective perspective (Kim et al., 2017). This study used a descriptive qualitative study for exploring the hemodialysis patients' experiences in how they successfully manage their fluid and dietary intake restriction. This study explores what experiences participants have and describes the findings in a way that directly reflects or closely resembles the terminology used in the initial research question (Cleary et al., 2014).

Samples

The sample of participants was drawn from a hemodialysis unit in a public hospital at West Sumatera Province, Indonesia. The sample of this study consisted of 15 hemodialysis patients. Broadly, informants were selected because of their personal experience or knowledge of the topic under study (Cleary et al., 2014). A purposive techniques sampling was used and the participants were recruited based on inclusion criteria. Patients undergoing hemodialysis for at least three months who successfully adhere to fluid and dietary restrictions indicated by the average of one-month inter-dialytic weight gain (IDWG) <2.5% were selected as participants.

Initially the principal investigator, facilitated by the hemodialysis head nurse, approached the eligible patients and informed them the research information, data collection procedures and asked their willingness to participate in this study. The information given also included the information that their participation in this study was voluntary and they could withdraw from this study without any consequences. Those who were willing to participate were then asked to provide written consent. Participant recruitment processes were continued until the data were saturated as indicated by the repetitive information and no new information gained. In this study, data saturation was achieved with 15 participants.

Ethical Consideration

Ethical approval for the study was granted by Public Hospital of Padang with number LB.02.02/5.7/195/16.5.2022. The study conforms to the ethical standards set out in the Declaration of Helsinki (World Medical Association, 2013). The participants provided informed consent before the interview was conducted. The respondents were informed with a written and verbal agreement of recruiting and interviewing, acknowledging their knowledge of the study's goal and potential benefits, and their right to remain anonymous. In this study none of the participants withdrew from the study.

Data Collection

Semi-structured interviews were carried out to explore hemodialysis patients' experiences in restricting fluid and dietary intake. The interview guideline was made based on fluid and dietary restrictions procedures. The interviews were conducted in the hemodialysis unit by the researchers (DPL, EAM, MM), individually and face-to-face, and recordings were made. In this study, each researcher interviewed five participants and conducted one-on-one interviews. Interviews were conducted between July – August 2022. Interviews lasted for around 45

Table 1. Participants Characteristics

Initial	Gender	Age (years)	Hemodialysis Duration	Education
P1	Female	62 years	4 months	Bachelor's degree
P2	Female	50 years	3 years	Elementary School
P3	Male	38 years	9 months	Senior High School
P4	Female	57 years	4 months	Junior High School
P5	Male	51 years	4 years	Bachelor's degree
P6	Female	39 years	7 months	Bachelor's degree
P7	Female	63 years	2 years	Bachelor's degree
P8	Female	44 years	1.5 years	Junior High School
P9	Male	58 years	6 months	Elementary School
P10	Male	54 years	1 year	Bachelor's degree
P11	Male	50 years	6 months	Bachelor's degree
P12	Female	51 years	3 years	Junior High School
P13	Female	62 years	6 years	Senior High School
P14	Female	46 years	3.5 years	Junior High School
P15	Female	40 years	3 years	Senior High School

– 60 minutes for each participant. Three participants (P4, P9, P12) conducted two interview sessions.

The interview guide was developed collaboratively by the research team including suggestions from the literature, pilot test and being refined following a staged process (Kallio et al., 2016). In this study, the interview guideline was developed by the research team based on the concept of fluid and dietary recommendation for hemodialysis patients from Daugirdas et al. (2015). Questions were intended as a guide for the interviewer, and additional probing questions were developed based on the participants' responses during the interview processes to further explore and gain greater depth of description about participants' experiences. The main questions posed to explore the phenomenon under study was "Could you tell me your experience as a hemodialysis patient?" After the participants answered the trigger question the researcher followed up by specific questions regarding their experience in managing their fluid and dietary intake.

This manuscript has been prepared in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines (Tong et al., 2007).

Data Analysis

All interviews were anonymized and later transcribed verbatim. The verbatim transcripts were reviewed for accuracy by two of the researchers, and printed transcript documents were used for the data analysis. Data were analyzed using thematic and qualitative content analysis. First, thematic analysis, using Clarke and Braun's (2013) six-step process, was conducted to systematically identifying and organizing patterns across our data. Each transcript, which consisted of words and phrases was read and data were formulated into coding separately by the research team (DPL & EAM). Nineteen codes were aggregated into clusters or rudimentary themes. Similarly, focus and scope were analyzed based on theory of fluid and dietary management. The discussion was conducted by the research team to consider and confirm themes and sub-themes.

Trustworthiness

The Lincoln and Guba (1986) strategies were used to ensure trustworthiness including credibility, transferability and dependability. Credibility relates to how accurately findings reflect the truth and are based on the assertions of participants (Korstjens & Moser, 2018; Lincoln & Guba, 1986). To strengthen our study's credibility, the researchers set up pre-interview meetings and made contact with individuals in advance, familiarity with the environment was also validated. Additionally, the researchers (DPL, MH, EAM) conducted peer debriefing by reviewing the findings with HM who had more advanced training and experience in qualitative study.

Transferability pertains to how accurately the findings can be transferred to other settings (Korstjens & Moser, 2018). To increase transferability, we provided sufficient description of the study context; participants' inclusion criteria, and research setting. Also, by verifying that other participant groups understood the study's findings completely. The findings of this study have been read by five hemodialysis patients who were not participants in the study but met the inclusion criteria and understood what was described in the results section. In this study, the researcher developed

Table 2. Identified themes and sub-themes

Themes	Sub-themes
Strategies in restricting fluid and dietary	Calculating/measuring the fluid intake
	Following written dietary guideline
	Reducing thirst
	Development habit on restricting of fluid and diet
Motivation in maintaining fluid and diet	Performing religious practice motivation
	Taking care of family motivation
Fear to side effects of non-adherence in restricting fluid and dietary	Fear of non-adherence-related physical symptoms
Effect of social support in restricting fluid and dietary prescriptions	Family-related social support
	Peer-related social support
	Health care professional-related social support

the interview guide, reviewed by the qualitative researcher (HM), conducted pilot testing and revised the interview guide based on the pilot results.

Dependability and confirmability relate to the extent to which the research and reporting process are systematic, transparent and accurate (Korstjens & Moser, 2018). In order to maintain and clarify the veracity of the information provided by the participants, this study also used repeat questions with the expectation of the same response. Additionally, the study findings were shared with the involved participants. The participants in the research were then shown the fundamentals of the research findings and documents and all of them agreed on the shared contents.

Results

Participants' Characteristics

A total of 15 participants was involved in this study. Table 1 presents the characteristics of the participants. The participants were in the age range of 38–62 years, with the average age being 51 years. Most of the participants were female. The participants had been on hemodialysis for more than three months. Table 1, shows the participants' characteristics.

In this descriptive qualitative study the researcher describes personal experience based on the descriptions of participants. The experience described is the participant's personal experience relating to the phenomenon. This description of the experience focuses on what is stated by the participants. The researcher makes significant statements according to the statements expressed by participants. Data analysis revealed four themes which encompassed sub-themes that further organized and expressed the thematic content. Quotes attributed to specific participants are identified.

Theme 1. Strategies for restricting fluid and dietary intake

Sub-theme: Calculating/measuring the fluid intake

The participants reported strategies in restricting fluid and dietary intake so that they successfully complied with the activity restriction. The ability to account for the water consumption helped them in measuring fluid intake. Most participants explained why they become successful in dealing with restricting of fluid because they regularly calculated and maintained the amount of water intake based on the recommendations. In this study, most participants communicated some techniques that they used to measure their fluid intake.

"*I restricted my drink volume to only a 600 ml bottle of mineral water. One bottle of mineral water is equal to three glasses of water. I controlled my drinking consumption to only three glasses of water every twenty-four hours.*" (P1)

"*I measured fluid intake. I had a small glass with a volume approximately equal to 150 cc of mineral water in case I get thirsty. In a day, I drink 2–2.5 glasses of water, never exceeding the limit.*" (P10)

Sub-theme: Following written dietary guidelines

In this study, the participants explained that they followed written guidelines for their dietary intake using a diary or personal and healthcare professional notes also help the participants to comply with the dietary restrictions. Participants reported not only counting the water consumption but also making a personal note that helped them doing activity dietary restrictions. Some participants in this study reported written notes help them in managing fluid and dietary restriction.

"*I took notes of my own. I will consult if I forget what I can consume and at what dosage it is safe to be consumed.*" (P4)

"*I kept notes from my doctor which contain specific information about suitable diets for me. My diets were directed by the instructions in the notes. In the end, we were the ones who control our own eating and limit our drink, such as when consuming watery fruits…"* (P5)

Sub-theme: Reducing thirst

Reducing thirst becomes one of the activities applied by participants when they are feeling thirsty. Many strategies to reduce thirst were performed by participants including reducing perspiration, gurgling with water, sucking ice, and doing distraction. It is also a significant for many participants to manage water intake and many participants showed some efforts to reduce their desire to drink much water, as can be seen from statements reported by participants.

"*I turned on my air conditioner when I get thirsty. That's one of the methods that I used. Reducing perspiration will reduce the thirst.*" (P6)

"*If I got really thirsty, I will just damp my tongue a little bit or gargle with water and suck a chunk of ice. That's my usual method to cope with my thirst*." (P11)

Sub-theme: Developed new habits on restricting of fluid

Also, in this study participants developed some habits to reduce fluid intake with several strategies of their own and most participants reported the techniques accommodating them to comply with fluid restriction by changing drinking habits during meal. In this study, it statements from participants explained how they succeeded with their own strategies of managing fluid intake.

"*While having my meal, I will avoid drinking water. However, after completing my meal, I will have about two sips of water, or I will take my medicines and then drink water right afterwards*." (P7)

"*After completing a meal, I will drink water around half a glass of water and take my medicines after completing my meal. With this, I only drink a small amount of water each day.*" (P12)

Theme 2. Motivation to restrict fluid and dietary intake

Sub-theme: Performing religious practices motivation

The urge to stay healthy and maintain the ability to perform regular spiritual activities constituted the spiritual motivation. Majority participants stated being healthy helped them to do religious activities. Participants revealed that their healthier condition made it easier to carry out worship or religious activities. Statements related to these aspects are illustrated below

"*I just want to be healthy. If I am healthy, it would be easy for me to perform worship*." (P4)

"*..I have to maintain my health by adhering to the recommended fluids and diet because it affects my health, I still want to pray (worship) a lot*." (P8)

Most participants also revealed that they still wanted to carry out their religious activities to the fullest. They explained that their usual religious activities were fasting, worshiping at the mosque and praying at home. The participants felt that they must adhere to a liquid diet so that they can maintain their current physical health in order to be able to perform the aforementioned rituals. The following are the participants' statements.

When my condition is healthy it is easy for me to do activities including worship, I can pray at the mosque every day." (P15)

"*I wish I could maintain my health so I don't have to pay anything to the hospital and so I could perform fasting, go to the mosque, or offer a prayer at home.*" (P11)

Sub-theme: Taking care of family motivation

On other hand, the intention to take care of children and other family members constituted the other sub-theme, a family-oriented one. It was figured out that family motivated hemodialysis patients to adhere to fluid and dietary restrictions. Participants expressed the desire to continue to survive so that they could care for their children so they could continue to grow and develop. Participants also expressed their desire to continue to be present in caring for their young children. There is a sense of concern that if they do not take care of their health, it will have an impact on their desire so that participants feel they have to continue to struggle to maintain their health condition so that they can continue to accompany their child into adulthood

"*…I will be able to take care of my children if I am healthy. I have a child who isn't married yet* ." (P8)

"*…My child is only a little boy. I won't leave him… because as father, I must be by his side. He still needs me*." (P12)

Theme 3. Fear of side effects of non-adherence in restricting fluid and dietary intake

Sub-theme: Fear of non-adherence-related physical symptoms

The participants knew of their bodies and the symptoms which they had experienced when they drank too much fluid or did not adhere to their diet. Most of them identified the complication as the effect of non-adherence to fluid and dietary restrictions including swelling, difficulty breathing, and cramps. Participants revealed that their healthier condition made it easier to carry out worship or religious activities. Statements from these participants are illustrated below.

"*I got scared when seeing swelling on other people's legs. If I don't comply with my fluid and dietary restrictions, I may end up in the same situation as them.*"

"*If we do not obey the rules, it may harmful and cause other health problems. I experienced a weight gain from the point of the dialysis process, I might experience leg cramps.*"

In this study, the unpleasant experience became a lesson for the participants. The fear of the impact they have experienced ultimately has a positive impact on the patient's daily life. Many participants learned from the experiences that they had. Based on their experiences, the participants were able to improve their ability to control and monitor their fluid intake and dietary intake. Following are some of the statements expressed by the participants.

"*I was afraid when my body swelled and I couldn't breathe, it was very terrible, I don't want it to happen again, so I try every day to comply with recommendations to restricts fluids and follow the recommended diet.*"

"*I don't want it to happen again. I'm afraid of shortness of breath. At the time, I couldn't breathe, I thought I died, now I have to follow recommendation*."

Theme 4. Effect of social support in restricting fluid and dietary prescriptions

Sub-theme: Family-related social supports

Social support was another element that affected patients' adherence to fluid and dietary restrictions. The family support was an essential for participants in their life because it helped them doing fluid and dietary intake by giving a reminder for the participants about their fluid consumption. In addition, this study also identified that family support took the form of preparing diet to be consumed by the participants. It can be seen by some statements from participants,

"*My children keep on reminding me to restrict my water intake and diet*." (P5)

"*My family members give me full support. For instance, they rarely cook dishes I am prohibited from eating. Most of the time they only cook dishes allowed for my health at home*." (P9)

Sub-theme: Peer-related social support

In this study, peer support has an important role for patients to maintain fluid and dietary intake. Most participants learned how to be successful in managing fluid and dietary restriction through sharing their experience and knowledge. The participants stated getting much information helped them to increase their capacity to adhere to fluid and dietary restriction.

"*We often discussed how to restrict fluids and go on a diet, I learned positive things from other patients who have successfully restricted fluids and diets and imitate what they do*,"

"*Sometimes I got information and new things when discussing with others and that really helps me.*"

Sub-theme: Health professional-related social supports

Health professional' support took the form of providing patients with an explanation and assistance in controlling their fluid and dietary intake. Based on the analysis, support from health professionals was a principal component of hemodialysis patients' successful management of fluid and dietary intake. Most participants stated:

"*The nutritionist informed me of which kind of food I am allowed to eat, which one I should avoid, and which one should be prohibited entirely. I have been informed of other things such as the menu items.*" (P7)

"*While consulting my doctor, I am told to reduce the amount of drink that I take. As to fruits, the doctor told me which one is prohibited for my health, the one I must not consume*." (P10)

"*The nurse told me to reduce my water consumption and gave me an instruction on how to adjust my drinking habit*." (P12)

Discussion

This study explored how hemodialysis patients successfully manage fluid and dietary restrictions. The success of hemodialysis patients in restricting their fluid and dietary intake was associated with four identified themes: strategies for restricting fluid and dietary intake, motivation to restrict fluid and dietary intake, fear of the effects of non-adherence to fluid and dietary restrictions, and social support effects on hemodialysis patients reflected the experiences of hemodialysis patients in their successful management of fluid and dietary intake.

The study showed that there are some strategies for restricting intake dietary, which are measuring of fluid intake, following written dietary intake guidelines, reducing thirst, and developing new habits on restricting of fluid and dietary intake. Hemodialysis patients used these as a way to control their food and fluid consumption. In line with previous study, hemodialysis patients have their own ways to manage diet and fluid restriction (Özkan & Taylan, 2022). The study showed all the participants considered coping with diet and thirst as a daily challenge for patients on hemodialysis, and some developed their own strategies to manage the situation.

In this study, knowing the amount and variety of food and fluid they were allowed to consume helped them modify their fluid intake. The participants poured liquids from the bottle into the cups provided and measured the amount, as it was their strategy to adhere to fluid restrictions. Consistent with a study conducted by Bulantekin Duzalan et al. (2021), hemodialysis patients have become accustomed to changing eating and drinking habits to improve adherence, such as measuring fluid intake using a cup. Measuring fluid intake is an important behavior performed by participants to achieve success in adhering to fluid restrictions.

In addition, reducing thirst is one the strategies done by participants in managing fluid intake. This study revealed that most participants employed various methods to alleviate thirst, such as reducing perspiration, gargling with water, chewing ice, and engaging in distracting activities. Thirst or dry mouth is among the most frequently occurring symptoms in hemodialysis patients. Managing thirst poses the greatest challenge for patients compared to dietary restrictions and other micronutrient concerns (Nerbass et al., 2017). Thirst-reducing activities are one of the keys to a patient's success in controlling fluid intake.

In this study, the participants developed a new habit of restricting of fluid during a meal. Most of them showed setting the amount of water consumption by dividing the amount of water during meal and taking medication. A previous qualitative study conducted by Mailani et al. (2021) showed that most participants revealed some strategies for managing fluids and diet, including setting a drinking schedule. In this study, it was also shown that the participants developed their patterns of fluid and dietary restriction. The study showed that the participants developed a habit or pattern to regulate the amount of fluid consumption. It seems to be an important thing that helps them in fluid restriction and to successfully manage their daily fluid intake.

The strategies were built by participants to restrict fluid and dietary intake by taking personal and healthcare professional notes. The participants likely took notes either based on their own observations and experiences (personal notes) or guidance from healthcare professionals. These notes could include details such as recommended fluid and food limits, reminders, or tracking their intake over time. These dietary plans instruct patients to regulate fruits, vegetables, legumes, dairy products, and whole grains due to the possibility of developing phosphorus and potassium-related problems (Biruete et al., 2017). These activities help them to manage fluid and dietary restriction.

This study figured out that motivation was a crucial part of hemodialysis patients' success in managing fluid and dietary intake. This motivation took two general forms: spiritual and family-oriented motivation. In this study, the participants were motivated to adhere to fluid and dietary restriction because they wanted to perform more religious practices. The urge to practice religious activities such as fasting in the holy month, praying, or performing worship motivated them to be strict and disciplined with their fluid and dietary intake.

Also, as for the second form of motivation, the desire to keep abreast with their children's growth and development and be around their families motivated them to adhere to the restrictions. The results of this study align with research conducted by Bulantekin Duzalan et al. (2021) which highlighted family-oriented motivation as a strategy used by participants to navigate life with a chronic illness. This support aids patients in managing their daily activities. Furthermore, in our study, participants expressed a desire to be there for their families, motivating them to maintain their health and well-being in the future through adherence to fluid and dietary restrictions.

In this study, family-oriented motivation appears to be an internal motivation that drives hemodialysis patients to adhere to fluid and dietary restrictions.

This study also revealed that hemodialysis patients had a fear of complications and a concern about physical appearance if they did not comply with the restrictions; they might suffer from edema, leg cramps, shortness of breath, and other symptoms that would affect their health condition. This awareness contributed to their autonomy and control in managing fluid and dietary intake. Fear of health complications that might arise if the recommended fluid and dietary intake was not observed appeared to be a motivating factor for their adherence (Okoyo Opiyo et al., 2020).

The support obtained from family, friends, and dialysis staff is a significant factor in promoting acceptance and adherence (Stevenson et al., 2018). The family support played a significant role in the success of fluid and dietary intake. Hemodialysis patients received a constant reminder from their children to restrict their fluid and dietary intake. Their families also provided safe and consumable diets for them. The family is a primary and natural unit of society. Most people consider their families to be of the most importance because they were born into them, spend a lot of time in their lives with them, and regard them highly (Afolabi et al., 2013). The study conducted by Sukartini et al.(2022) showed that participants' experience in managing fluid and dietary intake is also influenced by family support, whereas family monitors the patient's intake. In addition, the family gives patients confidence to restrict their fluid and dietary intake.

In this study, family support was illustrated as instrumental and emotional support, involving monitoring and limiting the food and drink they consume. According to several other studies on the family's role in controlling and preparing food, limiting fluid intake, and managing medication, the support given by the family will enhance the self-care and adherence related to the fluid and dietary restrictions of hemodialysis patients (Clark-Cutaia et al., 2019; Griva et al., 2013). This study also provided information that family support helped the participants manage fluid and dietary intake. Families assisted by providing food and monitoring and limiting fluid intake for them

Family support could assist with the adherence to fluid and dietary restrictions of hemodialysis patients (Griva et al., 2013). Family members provide direct assistance in the preparation of diets, as well as ready help, advice, and reminders to monitor the adherence to fluid and dietary restrictions (Özkan & Taylan, 2022). The control over hemodialysis patients' dietary intake requires family involvement. Family members are excellent

diet controllers. Hemodialysis patients may obtain varied diets if family members are involved and if the family members have an awareness of suitable diets for them. Consequently, the effectiveness of family participation in assisting patients would allow them to receive quality long-term care (Stevenson et al., 2018).

In addition, peer support has an important role for patients to maintain fluid and dietary intake. According to a prior study, peer support shared information about how to restrict fluid intake while acknowledging the assistance and attention received from friends in the hemodialysis unit (Mailani et al., 2021). Through exchanging experiences and expertise, most participants acquired the necessary skills to effectively manage fluid and dietary intake.

Moreover, this study also explained that the patients also conveyed support from health professionals in the form of information about diets, the allowable amount of fluid intake, and how to adjust their fluid intake habits. The dietary guidelines for dialysis patients include high calorie and protein intake as well as careful regulation of the intake of fluid and certain micronutrients, such as phosphorus, potassium, sodium, and calcium (Avesani et al., 2019; Chan, 2021). Previous studies showed that the presence of social support increases the adherence to fluid and dietary restrictions of hemodialysis patients (Lambert et al., 2017; Oquendo et al., 2017; Varghese, 2018). It is crucial that healthcare professionals interact intensively with hemodialysis patients and be knowledgeable about motivational techniques that can be applied when needed (Ok & Kutlu, 2021; Pereira et al., 2021; Yangöz et al., 2021).

The new insight from this study benefits other hemodialysis patients particularly in terms of the various options of strategies for managing their dietary and fluid restrictions. Additionally, nurses and other healthcare professionals may take the shared strategies as part of the information provided to the hemodialysis patients and family during the education sessions.

Compared to the previous studies among hemodialysis patients, this study specifically explored the successful experiences in managing the dietary and fluid intake restriction. However, semi-structured interview and the setting of interviews in this study should be considered as the limitation. The interview process in this study was conducted during patients undergoing hemodialysis. Although the researcher attempted to minimize the damage, practically it is challenging and sometimes led the participants to lose focus when answering the questions. It may lead to unclear or incomplete information.

Conclusion

With health information from healthcare professionals, patients developed their own strategies for managing fluid and dietary intake. They were motivated by the urge to stay healthy and maintain the ability to perform routine religious activities and the desire to be around their families. Besides, they had a fear of the worst possible condition that might arise. Lastly, support from family and health professionals helped them manage their fluid and dietary intake well. Therefore, this study recommends that providing comprehensive education on the importance of dietary and fluid intake management by healthcare professionals has become essential for hemodialysis patients. Additionally, the educational materials should address patients' specific concerns and preferences. In addition, family members' and caregivers' participation are crucial aspects in helping hemodialysis patients in managing fluid and diet restriction. They should encourage open communication and provide resources to actively participate in dietary and fluid intake management, thereby fostering a supportive environment at home.

Declaration of Interest

The authors declare that they have no conflicts of interest.

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Authors' Contribution

All the authors contributed to the conception and design of the study. Data collection: DPL, MM, and EAM collected the data and DPL, HM, MM performed data analysis. All author contributed to the drafting of the manuscript, revised it critically for important intellectual content and approved the final version for submission

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