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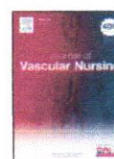
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A phenomenological study to explore patient experience of fluid and dietary restrictions imposed by hemodialysis

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Background: Noncompliance with fluid restrictions and diet is a major problem among hemodialysis patients. This can lead to fluid overload in the interdialytic phase and the accumulation of metabolic waste. This study aims to explore the life experience of patients undergoing hemodialysis and their compliance with fluid restrictions and diet.

Method: The design of this study was qualitative with a phenomenological approach. It involved 15 patients undergoing hemodialysis interviewed using semistructured interview guidelines. The data were collected and then transcribed and analyzed using the Van Mannen method. The coding analysis used Nvivo 12 software.

Results: Patients ranged from 24 to 64 years old. More than half of the patients were not compliant with the fluid restrictions based on the IDWG score (60%, n=15). Five themes emerged: fluid restrictions and understanding related to diet (health education, fluid and diet restriction, information provider, and experience), personal motivation (activity, side effects, need, and lack of motivation), social support (family), compliance (motivation and attitude), and disease management (management of fluid and diet restriction).

Conclusion: Hemodialysis patients expressed a number of concerns that caused them not to comply with diet and fluid restrictions. Several issues identified were patient-related and potentially modifiable using the correct information or health education related to diet and fluid restriction. Nurses should be more aware of identifying these problems to address compliance issues. Future research should aim to understand nurses' perceptions and practices that may guide interventions to resolve this urgent compliance issue.

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Introduction

Hemodialysis (HD) and restriction of fluid and diet are common treatments for patients with end-stage renal disease (ESRD).¹ Adaptation to lifestyle changes is needed in hemodialysis patients to regulate their dietary patterns, fluid intake, and medication.² Hemodialysis can put the patient at risk of fluid overload in the interdialytic periods, and there is the potential for the accumulation of metabolic waste if their dietary patterns and fluid intake are not optimal.³

The clinical outcome of hemodialysis is assessed based on HD patients' adherence to treatment therapy regimens and their fluid and dietary restrictions. Compliance based on fluid restrictions looks at interdialytic weight gain (IDWG) and dietary restriction compliance based on serum phosphate and potassium laboratory

values.⁴ However, adherence to fluid and dietary restrictions has become the mainstay of the majority of hemodialysis patients' lives. It can have an impact on increasing their IDWG, which, if it occurs continuously, will result in the expansion of their extracellular volume and high blood pressure, placing increased pressure on the cardiovascular system. Noncompliant fluid restrictions will eventually cause death and ventricular arrhythmia.⁵

Research conducted at Fatmawati Hospital Indonesia⁶ reported that 76% of patients who were not compliant with fluid restriction (64 respondents) were younger and HD processes had been undertaken for less than 12 months. Based on a preliminary study conducted by members of the Indonesian Dialysis Patients Community (KPCDI) East Java Branch, 60% of patients adhered to fluid restrictions, while 40% did not comply. The patients who adhere to fluid restriction are hemodialysis patients who have undergone HD for less than 12 months. In addition, as many as 70% of patients said that they maintained dietary restrictions.

Noncompliance among hemodialysis patients when regulating their fluid and dietary restrictions is caused by failure to adapt and their psychological burden (stress) in relation to lifestyle changes.⁷

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The factors contributing to noncompliance with restrictions on fluid intake and diet include demographics, individual personality, and other comorbidities.⁸ Changes in behavior in the patients must be executed so that the terms of their diet compliance and fluid restrictions can be met.

Behavior change theory improves compliance, but it must demonstrate effectiveness in regard to predicting behavior, modifying the targets, and explaining and operating behavior changes. The *Model of Adherence and Information Motivation Behavioral Skills* (IMB) can fulfill the theoretical elements of behavior change. Based on the IMB model, compliance with the therapeutic regimens in the treatment is influenced by 3 constructs, namely, *information barriers*, *motivation barriers (personal and social)*, and *behavioral skills barriers*. The IMB compliant model explained the compliance of the various samples. However, if there is a deficit in the 3 constructs, it will reduce the consistency of the performance of the model in terms of improving compliant behavior.⁹ Integration is required with other behavioral theories to avoid the risk of a IMB-compliant model deficit. Health belief model (HBM) theory is a behavioral theory that can achieve optimal behavior change if someone can overcome obstacles, benefits, self-efficacy, and threats if they do not perform the recommended steps.¹⁰

Qualitative research can explore the theory of behavior change in terms of adhering to fluid and dietary restrictions using *Information Motivation Behavioral Skills* (IMB) models of adherence and theory such as the *Health Belief Model* (HBM). The qualitative method offers a way to collect descriptions of each individual's personal experiences.¹¹ The method used in this study sought to describe the life experience of compliant hemodialysis patients in relation to their fluid and dietary restrictions for the creation of further knowledge.

Method

This study used a qualitative design with a phenomenological approach. The participants in this study were members of the Indonesian Dialysis Patient Community (KPCDI) East Java. The inclusion criteria in this study were:

1. CKD patients who have undergone hemodialysis > 6 months
2. Patients with age > 20 years
3. KPCDI members who are actively involved in organization programs or activities

The data were collected through in-depth interviews using semistructured interview guidelines, field notes, and tools such as a recorder. Interviews were conducted with 15 hemodialysis patients and were carried out when the patient's condition was stable. The interview place was the home of each patient. The interview process began on 31 January 2019, and the interviews were continued until data saturation was reached. No new codes were extracted on 27 June 2019.

To obtain the data and access information, semistructured in-depth interviews (face to face) were used as the main approach. Each interview was conducted for 30 - 45 minutes. Each interview was conducted by asking general questions related to the patient's current condition, followed by questions tailored to the patient's answers. The actual interview process depended on the responses of the patient. Some questions were used as a guide for conducting the interviews. When asking questions, the researcher tried to explore the patient's answers by asking "Can you explain that?" or "Can you give an example of your statement?"

The first researcher listened to the interview recording several times and transcribed it verbatim. They provided a number for each interview. The interviews were stored on a recording device that was then used to carry out the transcription, and the results

of verbatim data were sent to the participants to clarify the results of the interview (member checking). The interviews that were checked by the participants were analyzed using the Van Mannen method, and NVIVO 12 software was used to code the data for analysis.

At the same time, the researchers used the 6-step Van Mannen analysis method: 1) enter the participant's environment in accordance with their life experience, 2) explore the participant's experience, 3) reflect on the essential themes, 4) redescribe the phenomenon through the art of writing and rewriting, 5) preserve the phenomena found, and 6) balance the research context by considering both the parts and the whole. The researchers hit data saturation after 15 patients.

To gain rigor criteria for interpretive qualitative research, the researchers used the evaluation criteria of Guba and Lincoln.¹² The review process was also carried out by the research assistant to make the research more reliable. After listening and analyzing interviews, peer review was carried out by a PhD nursing student who already had training for rereading and refining the data. The research team used the methods described above to minimize the influence of their pre-existing ideas and beliefs on the current research findings. To provide transferability in this study, the researchers used a research introduction, described the background and stages of the study and tried to select samples with a maximum variation therein.

This research was approved by the Health Research Ethics Commission of the Faculty of Nursing, Universitas Airlangga: 1256-KEPK. This was published on 15 January 2019. After obtaining the required permission from the university, the researchers introduced themselves and provided information to potential participants, explaining the purpose and processes. After the participants had completed the informed consent form, the time and place of the interview were determined by agreement between the participants and the researcher. During the interview, feedback and verbal agreement were also obtained. In addition, to maintain anonymity, each interview was coded. Before starting the interview, the researchers asked the patient for permission. They were assured that their names and information would remain confidential. The patients had absolute discretion to terminate the interview whenever they wanted.

Results

The number of participants in this study was 15. Participant characteristics are provided in Table 1. The average age was 41 years, ranging from 24 years to 64 years. Participants had undergone hemodialysis for more than 6 months. Five themes and 12 subthemes were identified and are presented in Table 3.

Evidence relating to fluid and dietary restrictions is reflected in the IDWGA and phosphorus and potassium metabolic values. An average of 3 IDWG HD sessions was required to assess the patient's compliance with their fluid restrictions to determine if they were susceptible to an increase in IDWG in kilograms (kg). Seven participants had compliance with fluid restriction, with IDWG values of 1-<2 kg, while eight participants had IDWG values >2 kg, which were noncompliant with fluid restriction.

The laboratory values that indicate compliance while their dietary restrictions are in the normal category are in accordance with the reference values (Table 2).

Five themes and 12 subthemes were identified after coding using NVIVO 12 software. The themes have been described based on the codes identified from the results of the analysis. The identified themes on the life experience and compliance of hemodialysis patients in terms of their fluid and dietary restrictions are 1) an understanding of their fluid and dietary restrictions, 2)

Table 1
Characteristics of the participants.

Initials	Sex	Age (Year)	Marriage Status	Education	Profession
Q1	Male	44	Married	High school	Courier
P2	Female	29	Single	Bachelor's degree	College student
Q3	Male	28	Married	Bachelor's degree	Private sector
Q4	Male	38	Single	Bachelor's degree	Contractor
Q5	Female	56	widow	Middle school	housewife
Q6	Female	24	Single	Bachelor's degree	Teacher
Q7	Male	42	Single	High school	entrepreneur
Q8	Male	64	Married	High school	Retired
Q9	Male	52	Married	Bachelor's degree	entrepreneur
Q10	Female	64	Married	Elementary school	housewife
Q11	Female	39	Married	Middle school	Online business
Q12	Female	41	Single	Bachelor's degree	Online business
Q13	Female	33	Single	Bachelor's degree	entrepreneur
Q14	Female	44	Married	High school	housewife
Q15	Female	28	Single	Bachelor's degree	Online business

Table 2
History of the patient's fluid and dietary restrictions.

Initials	IDWG average	Category IDWG	Laboratory value			
			Phosphor		Potassium	
			Results (mmg/dL)	Reference value	Results	Reference value
Q1	> 2 kg	noncompliant	-	2.40	-	3.5-5.1 mEq/L
P2	1- < 2 kg	compliant	-	-	-	-
Q3	1- < 2 kg	compliant	-	-	-	-
Q4	> 2 kg	noncompliant	3.50	5.10	5.5	-
Q5	1- < 2 kg	compliant	-	mg/dl	-	-
Q6	1- < 2 kg	compliant	-	-	-	-
Q7	> 2 kg	noncompliant	4.83	-	3.7	-
Q8	> 2 kg	noncompliant	-	-	-	-
Q9	> 2 kg	noncompliant	4.20	-	4.9	-
Q10	1- < 2 kg	compliant	-	-	-	-
Q11	1- < 2 kg	compliant	-	-	-	-
Q12	1- < 2 kg	compliant	-	-	-	-
Q13	> 2 kg	noncompliant	-	-	-	-
Q14	> 2 kg	noncompliant	-	-	-	-
Q15	> 2 kg	noncompliant	5.27	-	4.1	-

self-motivation, 3) social support, 4) compliance, and 5) disease management. Themes, sub themes, and exemplars are shown in Table 3.

These five themes are interrelated between themes one to five. The themes identified can be used to understand the compliance of patients on hemodialysis to fluid and dietary restrictions.

Theme 1: understanding the fluid and dietary restrictions

Health education, knowledge, information, and providers' experience are important to understand fluid and dietary restrictions. Health education will affect the experience of hemodialysis patients when implementing fluid and dietary restrictions. Information providers can include peers, health professionals, and the media; which can affect patients' knowledge. The patient experience is used as a basis to determine their understanding, but this experience can also make the patients resistant to treatment recommendations. This is because some hemodialysis patients measure their food and beverage intake based on feeling.

Theme 2: self-motivation

Self-motivation is based on the activities that are continually needed, with the patients having felt the side effects of noncompliance with the fluid and diet restrictions and knowing the fluid and dietary restrictions required to meet their body's needs. Work

activities are one of the motivations for hemodialysis patients because they may be the head of the household. Therefore, they must continue to make a living for their family. Hemodialysis patients are not allowed to partake in tiring activities, but they assume that if they work and move, then their food and drink intake will be used up faster by their body. The self-motivation to restrict their fluids and diet appears to be based on the side effects felt by the patients, such as a physical drop when overtaking fluids and pain when there is excess fluid in the body.

Theme 3: social support

Family support influences patient compliance with fluid and dietary restrictions. The instrumental support provided by the family in terms of fluid and dietary restrictions can include families installing the Closed Circuit Television (CCTV) at home to monitor the patients' food and drink intake. The emotional support provided by the family can include the food consumed having been prepared by the family members and their families limiting the food and drink that they all consume. The family knows that sick patients will feel the impact of their noncompliance, so the family gives them confidence to restrict their fluid intake and diet.

Theme 4: compliance

Compliance in hemodialysis patients with fluid and diet restriction is based on motivation and behavior. Self-motivation

Table 3
Distribution of the themes, subthemes and exemplar codes.

Theme	Subthemes	Exemplar Codes
An understanding of their fluid and dietary restrictions	1. Health education	"I got information, food that must be avoided, and the same as the amount of food consumed must be limited" (P3)
	a. Eating and drinking	"I was told that it is not allowed to eat fruit and vegetables, then if you drink it, you urinate in the workshop for 24 hours and then add 500 ml." (P12)
	b. Activity restrictions	"The point is that HD patients should not be tired, if they are tired, they will drink a lot." (P4)
	2. Knowledge of their fluid and dietary restrictions	"I was given information to limit activities." (P6)
	a. The teaching of fluid and dietary restrictions	"HD patients in Indonesia get information on eating not allowed vegetables and fruit." (P4)
	b. Assumptions about their fluid and dietary restrictions	"I need balanced nutrition, only my kidney is sick or damaged, while my other organs need balanced nutrition too." (P14)
	3. Information Provider	"Since I joined the HD organization, I have more information in managing food consumed and drinks" (P1)
	a. HD patient community	"You can get a brochure from the hospital, in which you explain safe food consumption and how to manage drinking." (P13)
	b. Media	"I was given socialization with a nutritionist at the hospital at the time." (P9)
	c. Health professional	"With my move and potassium activities I am used. With the use of potassium I can eat fruit, eat bananas, eat oranges, and drink." (P1)
Self-motivation	4. Experience	"I do not bother to drink, drink as long as I am strong, taken in accordance with my weight gain, but if I am not strong, it means I have to reduce my water consumption." (P7)
	a. Mind management	"I have not used the measurements, I use feelings to consume food and drinks." (P3)
	b. The consequences are borne	"Theoretically, toxins come out of urine, but what we urinate cannot be maximized in the expenditure of sweat." (P7)
	c. Feeling	"I am actively working, who else can make a living if I am not." (P1)
	1. Activity	"I limit eating based on personal experience, if according to nutritionist I just drop it." (P9)
	a. Move	"I was once crowded, it was once and then never again, and I noticed that I drank." (P12)
	b. Work	"Drinking is also limited, ma'am, because it is not strong and drops when you discharge many HD times." (P10)
	2. Perceived side effects	"As long as I have HD in Indonesia, I can only eat animal foods. Vegetables should not be possible even though my damaged organ is only my kidney, while my other organs need a complete and balanced nutritional intake." (P1)
	a. Physical	"I am truly down, I just go to sleep, but I wash regularly, and I do not want to eat because the food is the same, so I become weak." (P9)
	b. Sick	"I have diabetes, my carbohydrates are limited and now I cannot eat my fruits and vegetables. So it is like my lack of nutrition." (P5)
Social support	3. Body needs	"I do have to control, but the role of my child is most dominant until at home with CCTV." (P5)
	a. Fluid intake	"My wife who always reminds me, do not drink a lot." (P3)
	b. Nutritional intake	"My husband prepares all the food I eat, and I cannot eat outside food, so I eat from home." (P14)
	4. Lack of motivation	"My wife also joined the management of KPCDI, so she (his wife) knows how to arrange food. Finally, let me eat anything. Because who knows my body, so am I." (P9)
	a. Psychological	"I tried the information from my HD friends in myself but indeed not everything can be applied depending on the strength of each person's body." (P1)
Compliant	b. Pessimism	"My doctor told me to eat all freely as long as you know the limits." (P13)
	Family	"After joining the group I know information from fellow HD patients, maybe because you feel like HD, sis." (P8)
	a. Instrument support	"If my friend drinks sweet, yes mlek (want), my sister, but I have to restrain you normally by eating candy." (P6)
	b. Information support	"If I'm still thirsty, I will be given honey by the lips of my husband, if you are not given ice cubes, so I will crush ice cubes." (P14)
	c. Emotional support	"I usually go up 2 kg, 3 kg that way, I used to go up 4 kg, but rarely because I cannot stand it when I pull many fluids during HD. I have to compensate and set it up so that it does not increase 4 kg, it is not good if the deficits continue." (P12)
Disease management	d. Reward support	"I consume phosphate binders, so every time I eat, foods that contain phosphate are immediately bound to a binder called renagel. So this is its function in the stomach where the phosphate is immediately bound and discharged through bowel movements." (P4)
	1. Motivation	
	a. Personal	
	b. Information from the health workers	
	c. Social	
Disease management	2. Behavior	
	Fluid and dietary restriction skills	
	Management of fluid and dietary restrictions	
	a. Modifications to the fluid and dietary restrictions	
	b. Weight monitoring	
Disease management	c. Protection of phosphate in food	

and social environment can motivate the patient. Compliance in hemodialysis patients is also influenced by fellow hemodialysis patients, which can enhance self-management. Hemodialysis patients instill a sense of trust in patients who suffer from the same disease by struggling with fluid and diet restrictions throughout their lives to maintain their quality of life.

Theme 5: disease management

Fluid management is carried out by hemodialysis patients who have a cognitive understanding of the effects and factors that influence their fluid and dietary restrictions. Patients control their fluid intake and diet by monitoring their body weight and consuming phosphate binders.

Discussion

Understanding the fluid and dietary restrictions identified 4 subthemes, including health education, knowledge, information, and experience. The subthemes are related to one another and help to form an increased understanding of the fluid and dietary restrictions. Based on the results of this study, the understanding of fluid and dietary restrictions differs from one patient to another because the information is provided by different informants, namely, health professionals, peers, and the media. The participants also received information from more experienced hemodialysis patients. The experience of the participants is drawn from information from fellows, which is a source of knowledge gained from the sensing process. This means that an observation process occurs that produces knowledge that can go on to shape behavior.

The health education provided by health professionals predialysis in each HD session can improve the patient's understanding of fluid and dietary restrictions.¹³ The active roles of and interactions with nurses and nutritionists are necessary to manage the patients' fluid and dietary restrictions.¹² The patients' understanding of their dietary restrictions is supported by their confidence, which makes them able make the right decisions when determining their dietary restrictions.¹⁴ Face-to-face health education is the choice of hemodialysis patients to facilitate the discussion of dietary choices, brochures with food lists, recipe modifications, serving sizes, meal plans, and specific recommendations for the consumption of phosphate binders. Younger patients use the internet to access information on fluid and dietary restrictions.¹⁵ Estimating their food and beverage intake without exact measurements can improve their adherence to fluid and dietary restrictions. This is because the patient feels unencumbered concerning the dosage and volume. Estimations are determined by patients on long-term hemodialysis who have sufficient experience limiting their fluids and diet.¹⁶ Experiences had negative and positive effects on patients' daily living based on the understanding of education by the patient itself.¹⁷

The difference in the information received by the hemodialysis patients related to the food and beverage restrictions can make the patients confused. Print media plays a role in helping patients remember recommended limits for fluid intake.¹⁸ Knowledge of fluid and diet restrictions is also based on the health education provided by either healthcare workers or peers and the patient's previous experiences.¹⁴

Motivation to restrict fluids and diet arises after patients feel fatigue, failure of treatment due to low compliance, financial burden, and limitations in their daily activities due to feeling the effects of their illness.¹⁹ The restrictions are due to them wanting to avoid being hospitalized and complications.²⁰ According to one study, patients are motivated to carry out the suggested therapeutic regimens because of the gratitude that they have for their lives being extended with hemodialysis.¹⁹

The process of limiting fluid intake and nutrition carried out throughout their life causes the participants to feel bored and stressed. This means that the participants do not comply with the fluid and dietary restrictions, resulting in the participants experiencing side effects.²¹ Decreased compliance with fluid and dietary restrictions among patients also has an impact on their health like swelling in the extremities, hypertension, shortness of breath, nausea, and weakness make the patients cannot carry out daily activities. The impact felt by the patients makes the patients more motivated to restrict their fluid and diet to meet their body's needs.

The support provided by the family will improve the self-care and adherence related to the fluid and dietary restrictions of hemodialysis patients,¹⁴ as found in several other studies of the family in regulating and preparing food, limiting fluid intake, and managing drugs.^{14,5} The form of family support is different for each gender. Male patients receive support from their partners related to diet preparation, while female patients receive support directly from their family members so that they adhere to their diet.⁷

Family support is a component needed when restricting the fluid and dietary intake of patients. In the case of dysfunction, the role of the family when they are eating will have an impact on the patient's adherence to fluid and dietary restrictions. This means that the role of the family in facilitating the patients through effective long-term care is successful.¹⁵ It is important for the family to be involved in regulating the dietary restrictions of the patient. The patient will feel that their family is a good diet regulator and that they (the patients) can obtain different diets from other members

of their family when the family is involved and understand their diet.²²

Compliance with fluid restrictions is more than difficult than dietary restrictions. The factors that influence compliance with fluid restrictions are environmental factors, trust, and comorbid complications.⁷ Patient compliance with implementing a low-salt diet is influenced by the health professionals, where they continue to stimulate the modification of their dietary restrictions, where there is guidance in assisting them in the maintenance of dietary restrictions and the giving of rewards to the patients in the form of praise for every successful act of obedience.²³ Patient trust with health professionals is the basis for implementing this diet modification because without trust the patient's needs cannot be identified properly and patient satisfaction with care will not be fulfilled. Trust between patients and health workers is fundamental to develop confidence in patients themselves in carrying out self-care.²⁴

To assess patient compliance when in reference to fluid and dietary restrictions according to,⁴ routine evaluation of fluid intake can be performed using interdialytic weight gain, and the monitoring of serum phosphate and potassium levels is effective for the evaluation of dietary complications.²⁵

Compliance arises from the belief and encouragement (motivation) received by hemodialysis patients, which are reflected in their behaviors of restricting fluids and adhering to the recommended diet.¹ The status of hemodialysis patients' adherence to fluid and dietary restrictions can be determined by their interdialytic weight gain and their laboratory results regarding dietary compliance.²⁶

The compliance of patients encouraged by fellow patients can improve their self-management and, in turn, improve their adherence to fluid and dietary restrictions. This is because hemodialysis patients can instill trust in their colleagues who experience the same disease, particularly when they are struggling to restrict their fluid and diet throughout their lives to maintain good quality of life.¹⁰ The experience of undergoing hemodialysis influences how decisions are made and the development of the skills needed to adapt to fluid and dietary restrictions.²⁷ The compliant behavior of hemodialysis patients is also reflected in the belief that the person who knows best about the condition of their body is the patient. The patient feels that they will get a signal if they have had excess fluid or food.²⁸

Managing the patient's diet can involve changing the method of cooking, reducing the portion size of foods high in potassium, and journaling to describe the food that is consumed.² According to the research, it takes experience, trial and error to describe food, and the associated procedures for managing a kidney-preserving diet, but according to research, it is possible.²⁹ Fluid management and diet guidelines that are recommended by practicing dietitians can increase patient satisfaction and increase the role of patients in limiting their fluids.²⁹

Fluid intake and food are elements needed by the body to live. Patients on hemodialysis need to restrict their fluid intake and diet and often do not comply with restrictions because they feel burdened, especially those who have been on hemodialysis for a long time.³⁰ The patient with poor renal function requires hemodialysis assistance within days, months or until the condition of kidney function begins to improve. Patients who have had to undergo hemodialysis for a long time may feel bored and tired due to medication and diet. Lifelong restriction of food and fluids can make patients feel hopeless and give up. This experience needs to be a concern because every patient has a different experience. Managing fluid and diet should be based on individualized assessments of what patients prefer, and the intake levels of fluid and food should be measured. Reducing patients' stress and depression through the management of their restricted fluids and diet will improve their

quality of life in turn.³¹ The management of fluid intake to reduce the excess fluid in patients is not enough because sodium intake can result in the storage of extracellular fluid. Hemodialysis patients must limit their sodium intake associated with dietary restrictions,³² as sodium is in the majority of food. IDWG is directly related to dietary restrictions.³³

Conclusion

Hemodialysis patients expressed a number of concerns that caused them not to comply with diet and fluid restrictions. Several issues identified were patient-related and potentially modifiable using the correct information or health education related to diet and fluid restriction. Nurses should be more aware of identifying these problems to address compliance issues. Future research should aim to understand nurses' perceptions and practices that may guide interventions to resolve this urgent issue of compliance.

Limitation

There are some limitations to this study that need to be acknowledged. Selection bias might have occurred, as it was possible that those who were active in the KPCDI were those who were more likely to be compliant with fluid and diet restrictions. Since this was interview-based research, social desirability and recall bias can undermine the quality of the data. However, this methodology is the best at obtaining reasons for compliance with fluid and diet restrictions from the patients' perspectives. To minimize researcher bias, all interviews were conducted by the same researcher who had received formal training in conducting qualitative interviews. The small number of respondents in this study made the results of the study probably not generalizable to all patients who had undergone hemodialysis even though the study had found saturation of data. This study also did not include feedback from health professionals even though at the time of preparing the questions it involved health professionals, so that this could be a part of further research.

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Declaration of Competing Interest

The authors declare that there is no conflict of interest in the study.

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