

ORIGINAL RESEARCH

Self-Management and Relating Factors among Chronic Kidney Disease Patients on Hemodialysis: An Indonesian Study



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Abstract

Background: The latest approach to managing chronic kidney disease (CKD) involves the implementation of self-management methods. Nonetheless, numerous previous studies indicate that self-management behaviors remain inadequate among hemodialysis patients in Indonesia. Therefore, a deeper comprehension of the factors that affect a patient's self-management should be studied.

Purpose: This study aimed to examine self-management among CKD patients undergoing hemodialysis and its relating factors.

Methods: The study used a cross-sectional approach. A convenience sample of 164 patients undergoing hemodialysis determined using a table of power analysis was recruited from two hemodialysis centers in Padang, Indonesia, from May to July 2022. Hemodialysis self-management instrument-18 (HDSMI-18), the scale of self-efficacy for chronic diseases, and the hemodialysis knowledge questionnaire were used as the instruments. T-tests, ANOVA, Spearman correlation test, and multiple linear regression were used to analyse the data.

Results: Self-management, knowledge, and self-efficacy mean scores were 48.62(8.45), 17.77(2.96), and 43.05(10.08), respectively. There was a significant positive correlation between self-management with education ($p=0.000$), employment status ($p=0.025$), monthly income ($p=0.003$), knowledge ($p=0.000$), and self-efficacy ($p=0.004$). Multiple linear regression analyses for overall self-management indicated that knowledge and education were the main influencing factors of self-management.

Conclusion: Hemodialysis patients had a subpar degree of self-management. Furthermore, knowledge and education were the most significant influencing factors of self-management. Nurses are expected to be able to provide structured education to increase patient knowledge which will later yield good self-management.

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1. Introduction

Chronic kidney disease (CKD) is a complex condition in which the kidneys cannot work correctly due to structural or functional damage leading to excessive accumulation of fluids and wastes in the blood (Thomas, 2019). CKD is a significant global health issue and is seen as a major contributor to the poor health outcomes of the majority of non-communicable diseases, such as diabetes, hypertension, and cardiovascular disease (Luyckx et al., 2018). The prevalence of chronic kidney disease in Indonesia in patients aged 15 years and over was 713,783 people (0.38%) of the entire Indonesian population. West Sumatra is recorded as the fifth province with the most chronic kidney disease patients, with around 1,344 patients undergoing hemodialysis (Indonesian Renal Registry, 2018)

The rise in people with CKD has led to an increase in the number of people receiving hemodialysis (HD). HD patients have significant physical and psychological challenges and noncompliance which lead to poor adherence, which is associated with high mortality rates (Denhaerynck et al., 2007). Due to the nature of the disease and the conditions needed for hemodialysis, patients who receive treatment also report several issues like decreased self-confidence, social isolation, inactivity, and work-related issues (Mousa et al., 2018). Results can be improved by encouraging patients to self-manage their treatment plan and giving them the

tools to do so. However, one of the most effective methods to reduce mortality and improve patients' quality of life is to help them better manage their own care (Griva et al., 2011).

An emerging trend in nursing care for chronic diseases like CKD is encouraging self-management. Self-management is when CKD patients actively work to reduce the occurrence of comorbidities and enable them to lead the lifestyles they choose by, among other things, monitoring and controlling their symptoms, managing their healthcare, and using the resources that are available to them (Curtin et al., 2004). According to a previous study, a key component of treatment plans for chronic diseases is the patient's capacity for self-management (Ameh et al., 2020). It has been demonstrated that people with CKD who poorly self-manage have more significant mortality. The problems of CKD patients are also decreased by improved self-management (Griva et al., 2011). Self-management refers to patients' proactive attempts to manage and take an active role in their medical care to improve their health. Patients with good self-care management will improve their quality of life (Malini et al., 2022). Managing issues and symptoms, mobilizing healthcare resources, and reducing the disease's impact on their way of life are all behaviors resulting from good self-management (Curtin et al., 2004).

The previous study showed that individuals receiving hemodialysis exercised a considerable amount of self-management (Hafezieh et al., 2020). Additionally, there was a noteworthy connection between self-efficacy, knowledge, and self-management. Therefore, patients' self-efficacy and knowledge increase in proportion to their level of self-management (Hafezieh et al., 2020). Suarilah and Lin (2022) reported that early-stage CKD patients from Indonesia showed poor health literacy levels, positive illness perceptions, and high levels of self-efficacy. Education level, monthly income, comorbidity history in the family, health literacy, and self-efficacy were found to influence self-management. Similar results were obtained from other studies that investigated the main factors influencing CKD self-management. Low health literacy, for instance, has been linked to poor self-management (Chen et al., 2018; Devraj et al., 2018), whereas self-efficacy has been linked to enhanced self-management in people with CKD (Lin et al., 2013).

Self-efficacy is a personal belief to be successful in certain situations (Mousa et al., 2018). According to the literature, increasing a patient's sense of self-efficacy is a method for treating particular diseases and can help the condition of the patient (Moattari et al., 2012). Previous research has shown that patients' knowledge, self-efficacy, the availability of social support, and depression were the main factors influencing self-management (Li et al., 2014). Inadequate patient knowledge and skills can lead to a reduction in their motivation to take preventive methods and a reduction in self-management and self-efficacy.

Previous studies have shown that the level of self-management of people undergoing hemodialysis could have been better, including in Indonesia (Natashia et al., 2019). Many studies reported factors relating to self-management. Despite inconsistent findings throughout these studies, it was discovered that age, gender, marriage, education, and occupation impacted patients' ability to control their care (Lin et al., 2013; Suarilah & Lin, 2022; Wang & Ma., 2015). Moreover, various self-management strategies and viewpoints may explain why the levels in earlier trials were not good (Curtin et al., 2004; Suarilah & Lin, 2022; Wang & Ma., 2015). Therefore, this study aimed to examine self-management among CKD patients undergoing hemodialysis and the factors influencing self-management in patients undergoing hemodialysis in Padang, Indonesia.

2. Methods

2.1 Research design

This study used a cross-sectional descriptive design and was conducted in two hemodialysis centres in Padang, Indonesia. The study collected the respondents' characteristics, self-management, self-efficacy, and knowledge of chronic kidney disease patients undergoing hemodialysis.

2.2 Setting and samples

Two hemodialysis units in two tertiary hospitals in Padang, Indonesia, were used to gather a convenience sample of 164 patients receiving hemodialysis. Adult patients aged from 18 to 65 years old, regular hemodialysis patients for at least three months, and the ability to read and write Indonesian were the inclusion criteria. Pregnant women and those who claimed mental illness like schizophrenia as well as psychological or cognitive impairments like dementia were excluded.

The sample size was determined using a table of power analysis. As many as 164 samples were estimated with a power of 90%, an alpha level of 0.05, and a medium effect size of 0.25 (two-sided) (Polit & Beck, 2008). Finally, 164 patients were included in the sample size, giving it a statistical power of 0.90, and all the participants completed the instruments.

2.3 Measurement and data collection

The study used three questionnaires. Additionally, a demographic characteristic form was utilized to determine the patients' age, gender, marital status, level of education, length of time receiving hemodialysis, and the cause of renal failure. The questionnaires were described below.

2.3.1 Self-management

Hemodialysis self-management instrument-18 (HDSMI-18) was used to measure self-management. This scale contains 18 items in four subscales, including partnership (four items), self-care (six items), problem-solving (five items), and emotional management (three items). Each question number one through four was assigned after the things were assessed on the basis of never, rare, occasionally, and always. The total result yielded a score for all HDSMI-18 questions that ranged from 18 to 72. A higher rating indicates improved patient self-management and the validation of all the questions in this instrument was >0.9 (Chen et al., 2021). Both forward and backward translations were used during the translation process. Validity was assessed using the Content Validity Index by Scale (S-CVI) and Content Validity Index for Item (I-CVI) tests. For each instrument, three separate nursing specialists participated in this process. It was computed by dividing the three experts' ratings by the total number of items on the scale (Polit & Beck, 2008). Regarding the three instruments' items' relevance, accuracy, clarity, and ambiguity, a rating of 3 or 4 was deemed sufficient. When three experts were involved, S-CVI was considered valid if the overall scale score was >0.80 , and I-CVI was considered relevant if the score was 0.78. Cronbach's alpha coefficient >0.70 was indicated as appropriate for the instruments' dependability (Polit & Beck, 2008). Minor adjustments were made to the scale pattern and punctuation in the final instruments. The S-CVI for the Indonesian version of the 18 self-management items (HDSMI-18) was 0.92, and the I-CVI ranged from 0.78 to 1. Cronbach's alpha values were in the 0.82–0.88 range, indicating good reliability.

2.3.2 Hemodialysis (HD) knowledge

The creators of this 25-item questionnaire were Curtin et al. (2004). Anemia, food, medication, renal function, hemodialysis, treatment, and rehabilitation were all evaluated by this questionnaire. The responses were intended to be true or false. The right answers received one point, whereas the incorrect ones received zero, and the final score ranged from 0 to 25. The original questionnaire's content validity index was reported to be 0.70, and its reliability was 0.94 (Curtin et al., 2004). The questionnaire had undergone the translation process, including forward translation to and back-translation from Indonesian. The Content Validity Index by Scale (S-CVI) and Content Validity Index for Item (I-CVI) tests were used to evaluate validity. For each instrument, three separate nurse specialists participated in this process. It was computed by dividing the three experts' ratings by the total number of items on the scale (Polit & Beck, 2008). Minor punctuation and scale layout modifications were made in the questionnaire's final edition. The S-CVI was 0.89 for 25 hemodialysis items in the Indonesian edition, while the I-CVI ranged from 0.78 to 1. Cronbach's alpha values were in the range of 0.78 and 0.86, showing high dependability.

2.3.3 The chronic disease self-efficacy scale

Six items made up the questionnaire of the chronic disease self-efficacy scale created by Lorig et al. (1999). There are ten levels of self-efficacy, ranging from zero to ten. The better the self-efficacy, the higher the score. The original scale had a reliability score of 0.91 (Lorig et al., 1999). The questionnaire had a translation process, including forward translation to and back-translation from Indonesian. The Content Validity Index by Scale (S-CVI) and Content Validity Index for Item (I-CVI) tests were used to evaluate validity. For each instrument, three separate nursing specialists participated in this process. It was computed by dividing the three experts' ratings by the total number of items on the scale (Polit & Beck, 2008). Minor punctuation and scale layout modifications were made in the questionnaire's final edition. The S-CVI was 0.85,

while the I-CVI ranged from 0.82 to 1. Cronbach's alpha values were in the range of 0.81 and 0.88, showing high reliability.

In this study, 164 patients were recruited by convenience sampling. Firstly, the researcher asked the head nurse about the total number of patients undergoing hemodialysis and informed the study's goals and methods. Secondly, head nurses helped identify participants suited for inclusion criteria. Researchers were also assisted by nurses working in the hemodialysis unit regarding participants who matched the sample criteria. Next, the researcher directly met the patients to explain the purpose of the study and distributed questionnaires. Thirdly, the self-management, self-efficacy, and patient knowledge questionnaires were completed before, during, or after dialysis, depending on the patient's preferences. Finally, the knowledge questions were asked last to lessen the impact on the other two questionnaires. Therefore, one session for 20 minutes was used to complete all three surveys. Data collection occurred in hemodialysis units at two hospitals in Padang, Indonesia, from May to July 2022. In collecting data, researchers wore personal protective equipment and followed the COVID-9 protocol as part of efforts to prevent infectious diseases.

2.4 Data analysis

The characteristics of the respondents and their self-management were analyzed using descriptive statistics. Univariate associations between the overall self-management and the participants' characteristics were assessed using t-tests and ANOVA. T-test was used to analyze gender and marital status (dichotomous data), while ANOVA was used to analyze age, education level, job, monthly income, history of being under hemodialysis, and the cause of renal failure. The data were previously tested for normality by the Kolmogorov-Smirnov test and were tested by the Levene test for homogeneity. The only variable with a normal distribution was the self-management score. Therefore, the association between self-management, self-efficacy, and knowledge was investigated using the Spearman correlation test. To determine whether employment, education, monthly income, knowledge, and self-efficacy were predictors of the self-management score, multivariate linear regression was utilized.

2.5 Ethical considerations

Ethics approval to conduct this research was granted by the Medical Research Ethics Committee of RSUP Dr.M.Djamil Padang, number: LB.02.02/5.7/162/2022. The study was conducted following the approved protocol. Informed consent was obtained from all participants before participating in this study.

3. Results

3.1 Characteristics of respondents and the correlation with self-management

Among 164 patients who completed the survey, most of them were 46-60 years old (47%), male (54.9%), married (85.4%), senior high school level of study (45.7%), unemployed (42.1%), monthly income of 2-4 million IDR (32.3%), history of being under hemodialysis (HD) more than three years (32.9%) and hypertension cause of renal failure (50.6%) (Table 1). Self-management significantly positively correlated with educational attainment, employment status, and monthly income ($p < 0.05$). There was no discernible connection between other factors and self-management (Table 1). The minimum and maximum scores of HD knowledge were 10 and 24, respectively, with the mean knowledge score being 17.77 (2.96). The least and maximum self-efficacy ratings were 6 and 60, respectively, with a mean of 43.05 (10.08).

Table 1. Respondent's characteristics and their relationship with self-management (n=164)

Characteristics	f (%)	Mean (SD)	Self-management mean (SD)	t	F	p
Age (year)						
<25	11 (6.7)		51.45 (8.802)		0.89	0.449
26-45	42 (25.6)		48.71 (8.999)			
46-60	77 (47.0)		48.90 (8.675)			
>60	34 (20.7)		46.94 (7.036)			

Table 1. Continued

Characteristics	f (%)	Mean (SD)	Self-management mean (SD)	t	F	p
Gender						
Male	90 (54.9)		47.94 (8.726)	-1.12		0.263
Female	74 (45.1)		49.43 (8.085)			
Marital status						
Not married	24 (14.6)		50.46 (8.262)	-1.16		0.249
Married	140 (85.4)		48.30 (8.471)			
Education level						
Elementary School	14 (8.6)		43.79 (6.807)		90.8	0.000*
Junior High school	31 (18.9)		45.58 (7.518)			
Senior High school	75 (45.7)		47.92 (6.994)			
University	44 (26.8)		53.48 (9.685)			
Job						
Employed	41 (25.0)		50.05 (10.18)		3.19	0.025*
Retired	20 (12.2)		52.90 (8.83)			
Housewife	34 (20.7)		46.91 (5.86)			
Unemployed	69 (42.1)		47.36 (7.88)			
Monthly income (IDR)						
<2 millions	101 (61.6)		47.04 (7.56)		6.04	0.003*
2 – 4 millions	53 (32.3)		50.45 (8.80)			
>4 millions	10 (6.1)		54.80 (10.95)			
History of being under HD						
< 1 year	74 (45.2)		48.96 (9.27)		0.266	0.767
1 – 3 years	36 (21.9)		47.72 (7.14)			
>3 years	54 (32.9)		48.74 (8.17)			
Cause of renal failure						
Hypertension	83 (50.6)		48.25 (8.31)		1.32	0.271
Diabetes	41 (25.0)		47.95 (8.02)			
Urolithiasis/ urinary tract disorders	18 (11)		47.78 (7.47)			
Others	22 (13.4)		51.91 (10.17)			
Knowledge		17.77 (2.96)				
Self Efficacy		43.05 (10.08)				

Note. t= T-test, and F = ANOVA

* Statistically significant ($p < 0.05$)

3.2 Self-management and its dimensions

The partnership subscale had an average item score of 2.46(0.84), self-care at 2.69(0.82), problem-solving at 2.74(0.80), and emotional management at 2.96(0.76). Additionally, the HD patients scored highest at the subscale for emotional management and lowest at partnership (Table 2). Regarding the responses provided by patients to the questionnaire's items about self-management, "I will definitely take care of my arteriovenous fistulae" and "I will follow the instructions of healthcare providers" was the highest mean score for self-management. The lowest mean score was "I will specifically meet dietary requirements" and "When I am thirsty for water, I will try to find ways".

Table 2. Self-management and its dimension (n=164)

No	Items	Mean (SD)	Range
<i>Partnership</i>			
1	I will discuss my expectations with healthcare providers	2.46 (0.84)	1-4
2	I will make decisions with healthcare providers	2.51 (0.80)	1-4
3	I will proactively let healthcare providers know my expectations for desired goals	2.76 (0.83)	1-4
4	I will check the settings on the dialysis machine	2.45 (0.86)	1-4
		2.13 (0.86)	1-4

Table 2. Continued

No	Items	Mean (SD)	Range
<i>Self-care</i>			
5	When I am thirsty for water, I will try to find ways	2.05 (0.84)	1-4
6	Before hemodialysis, I will cleanse the puncture site	2.81 (0.93)	1-4
7	I will specifically meet dietary requirements	1.96 (0.93)	1-4
8	I will specifically choose foods low in potassium	2.76 (0.95)	1-4
9	I will surely take care of my arteriovenous fistulae	3.31 (0.63)	1-4
10	I will follow the guidance of healthcare providers	3.26 (0.67)	1-4
<i>Problem-Solving</i>			
11	I will search for information on kidney diseases	2.77 (0.79)	1-4
12	I will take the initiative to inquire about others when I ingest foods high in phosphorus	2.12 (0.99)	1-4
13	I will take the initiative to inquire others when the results of blood lab tests are not ideal	2.75 (0.82)	1-4
14	I will take the initiative to inquire about others when I have feelings of discomfort	3.10 (0.66)	1-4
15	I will take the initiative to inquire about others when I have problems concerning kidney diseases,	3.00 (0.74)	1-4
<i>Emotional management</i>			
16	I will seek help from others	2.80 (0.85)	1-4
17	I reduce emotional stress from dialysis	3.00 (0.72)	1-4
18	I can talk to health providers comfortably	3.08 (0.72)	1-4
<i>Overall Self-management</i>		48.62 (8.45)	18-72

3.3 The relationship between self-management, knowledge, and self-efficacy

The relationships between self-management, knowledge, and self-efficacy were all significantly positive ($p < 0.05$), as shown in Table 3. Therefore, the degree of self-management grew as knowledge and self-efficacy increased. There was a strong positive association between knowledge, self-efficacy scores, and the “partnership”, “self-care”, and “emotional management” dimensions of self-management. Problem-solving dimension only positively correlated with knowledge and had no significant correlation with the self-efficacy scores.

Table 3. The correlation between self-management, knowledge, and self-efficacy

Self-management	Knowledge Correlation coefficient	<i>p</i>	Self-efficacy Correlation coefficient	<i>p</i>
Overall Self-management	0.351	0.000*	0.223	0.004*
Partnerships	0.329	0.000*	0.181	0.020*
Self-care	0.278	0.000*	0.228	0.003*
Problem-solving	0.304	0.000*	0.099	0.206
Emotional management	0.201	0.010*	0.204	0.009*

Note: *Spearman correlation test, statistically significant at $p < 0.05$

3.4 Factors influencing self-management

Multiple regression analyses were carried out based on independent variables to identify the variables affecting participants' self-management. The result revealed that education ($\beta = -0.300$) and knowledge ($\beta = 0.316$) were the factors influencing self-management. Also, knowledge was found to exert the most significant influence on self-management of all the factors (Table 4).

Table 4. Factors influencing self-management

Variable	B	SE	β	t	p
(Constant)	24.332	3.781		6.435	0.000*
Education	2.845	0.669	0.300	4.251	0.000*
Knowledge	0.901	0.202	0.316	4.467	0.000*

Note: *Multiple linear regression test, statistically significant at $p < 0.05$

4. Discussion

This study aimed to examine self-management among CKD patients undergoing hemodialysis in Padang, Indonesia, and how it relates to patients' characteristics, self-efficacy, and knowledge. The results showed that hemodialysis patients had a subpar degree of self-management. Furthermore, knowledge and education were the most significant influencing factors of self-management.

4.1 Self-management and its dimensions

This study reported that the mean score of self-management was 48.62(8.45). The score is low compared to previous studies (Hafezieh et al., 2020; Li et al., 2014; Suarilah & Lin, 2022). Li et al. (2014)'s study in China and Hafezieh et al. (2020)'s study in Iran showed that the mean scores of self-management among hemodialysis patients were 56.01 and 58.88, respectively. Similar research has also been reported on Java Island, Indonesia. The self-management score of patients diagnosed with early-stage CKD was 76.92(9.45) (Suarilah & Lin, 2022). This subpar degree of self-management could be caused by a low level on the partnership subscale of self-management in this study. This study also revealed that many patients rarely discuss with staff or doctors their expectations for desired outcomes. This research showed that Indonesian patients' roles were viewed as more passive. This discrepancy can be brought on by the cultural and healthcare systems that differ between Indonesia and the other nations mentioned in the research. According to self-management ideas, patients should be more active in managing their illnesses. Daily management duties should gradually move from the healthcare professional to the patient. Therefore, understanding and assisting in improving self-management depends heavily on communication and partnership (Ameh et al., 2020; Malini et al., 2022). Curtin et al. (2004) point out that self-managements by people receiving hemodialysis includes eight dimensions: making recommendations to healthcare professionals, taking care of oneself while receiving hemodialysis, seeking information, using alternative therapies, managing specific symptoms, being assertive in one's self-advocacy, managing one's impressions, and sharing responsibility.

This study also found that some demographic characteristics, such as education, job, and monthly income, were significantly correlated with self-management. Regarding education, the result is similar to Li et al. (2014)'s study, which points out that the patient's education has correlated with self-management. Patients are usually provided with standardized information about such topics as the disease process, disruptive behaviors for health, and caring skills. Highly educated people will likely easily understand information; conversely, people with low education face difficulties in translating information. When patients with high education receive information about their health, it will be well received to enhance their ability to manage their health problems (Schunk & DiBenedetto, 2020). Moreover, multiple linear regression in this study indicated that education significantly influenced overall self-management. Education up to college/university significantly impacted general self-management. This finding was consistent with a psychological study conducted by Van Prooijen (2017). The level of education influences a range of cognitive, emotional, and social outcomes (Schunk & DiBenedetto, 2020).

In terms of job and monthly income, a related study of Vietnamese patients with chronic diseases discovered that these factors also impacted self-management (Huong & Le, 2015). Mailani et al. (2022) found that many hemodialysis patients experience emotional reactions because they experience various physical problems that hinder activities and prevent regular work. As a result, they feel useless at a productive age. A Study by Hafezieh et al. (2020) also showed a significant correlation between job and self-management. Patients who work cannot be separated from income. Patients with low monthly incomes tend to find it difficult to handle daily difficulties, either intuitively or systematically (Huong & Le, 2015). Self-management was significantly influenced by family income equal to or higher than the minimum regional payment.

The findings showed that the HD patients had the highest score on the self-management subscale for emotional management and the lowest on a partnership, while the research by Li et al. (2014) in Beijing, China, showed the reverse. Meanwhile, a study by Hafezieh et al. (2020) in Iran reveals different things. The highest and the lowest mean scores of self-management dimensions belonged to self-care and problem-solving, respectively. This could probably happen since many factors influence patient self-management, such as the characteristics of the respondents, the culture in each country, and policies in the hospital. The highest subscale in this

study is emotional management. In this subscale, the patients always seek help from others, are able to reduce emotional stress from dialysis, and are able to talk to health providers comfortably. Earlier research indicated that most individuals in a hemodialysis unit received support from various sources, such as family, peers, and professionals. Some patients highlighted their family as a source of strength, with their spouse and children providing care and support (Mailani et al., 2021). The support received from family, friends, and staff responsible for dialysis is essential in promoting acceptance and adherence to treatment (Stevenson et al., 2018). These forms of support are considered essential for fostering adaptive behaviors due to the emotional and physical encouragement that they provide (Cho & Shin, 2016). A previous study revealed that peer support programs positively impacted self-management among patients with chronic kidney disease undergoing hemodialysis. It is recommended that peer support programs be offered early on to help patients learn about self-management from their peers (Husain et al., 2020).

On the other hand, this study discovered that the lowest subscale of self-management was partnership. In this subscale, CKD patients have not established partnerships with healthcare providers in HD units, are not proactive in asking and discussing their expectations with healthcare providers, and are reluctant to discuss decision-making and desired goals with healthcare providers proactively. To establish a partnership in healthcare settings, patients must actively seek information from various sources, keep track of their symptoms, and collaborate on planning their health management. This behavior is the least common way to manage their health. Additionally, partnership behavior involves attending health education centers or classes to gather information (Li et al., 2014). As demonstrated by previous research, poor adherence can result from inadequate education and information delivery (Mailani et al., 2021). Patients undergoing hemodialysis in Indonesia lack education, preventing them from forming partnerships. This is due to factors such as income levels, which may limit access to the Internet for disease-related information (Suarilah & Lin, 2022). Education level was found to have a negative association with partnership behavior in this study, consistent with research conducted in the US, which suggested that higher education promotes independent thinking (Curtin et al., 2008). Educating patients about their specific kidney disease can help them understand its progression and promote the partnership as a self-management behavior. As a result, healthcare providers must take additional measures to engage patients with limited education in partnerships.

4.2 The relationship between knowledge, self-efficacy, and self-management

The study showed a significant positive correlation between knowledge, self-efficacy, and self-management. This was similar to studies in Iran and China claiming that self-management positively correlates with self-efficacy and knowledge (Hafezieh et al., 2020; Li et al., 2014). Self-efficacy is the conviction that one can complete a task or achieve a specific goal. In contrast, self-management is the capacity of an individual to control their thoughts, emotions, and behaviors to achieve personal goals (Lorig & Holman, 2003). According to research, people with high levels of self-efficacy are more likely to practice self-management behaviors like creating and attaining objectives, keeping track of their progress, and changing their behavior as needed in response to challenges or setbacks. The self-efficacy of patients undergoing dialysis is a valuable determinant of effective management, nursing interventions, and better outcomes (Almutary & Tayyib, 2021). Evidence shows that patients on dialysis with better self-efficacy reported better outcomes than those with worse self-efficacy (Almutary & Tayyib, 2021). Additionally, self-efficacy mediated the relationship between knowledge and self-care in CKD patients (Wu et al., 2016).

The result indicated that the self-efficacy score in this study was higher than a previous Palestine study which was 38.70(11.06) (Mousa et al., 2018). Self-efficacy was positively correlated with almost all dimensions of self-management, such as partnership, self-care, and emotional management, except the problem-solving dimension. High self-efficacy patients with CKD receiving hemodialysis demonstrated improved self-management, particularly in self-care. This conclusion is consistent with earlier renal disease research which found that self-efficacy could assist the patient in displaying self-management practices (Curtin et al., 2004; Hafezieh et al., 2020; Li et al., 2014; Smith et al., 2010; Suarilah & Lin, 2022). High self-efficacy patients with chronic illnesses are more capable of managing themselves, which enables them to live better lives with less impairment (Yusuf et al., 2017). Another study also reported that health literacy and self-efficacy significantly correlated with self-management (Suarilah & Lin, 2022).

The knowledge mean score of patients with CKD undergoing hemodialysis in this study was almost similar to the previous research by Li et al. (2014), which was 16.89(4.03). The result showed that the patients need to receive precise information about the hemodialysis process and how the procedure is carried out in detail. Suarilah & Lin (2022) showed that patients with CKD in Indonesia have a low level of health literacy. Patients may need to correctly interpret health information because doctors frequently disregard health literacy in standard patient treatment, although health information may not directly alter behavior (de Quiros et al., 2017). The study also showed that knowledge was positively correlated with self-management and all its subscales (partnership, self-care, emotional management, and problem-solving). Problem-solving dimension only positively correlates with knowledge, and no significant correlation was found between problem-solving and self-efficacy. This result is almost similar to the study by Hafezieh et al. (2020), which reported a significant positive association between knowledge and the "partnership" and "problem-solving" dimensions. Making decisions requires having access to sufficient and accurate knowledge (Lorig & Holman, 2003). According to Li et al. (2014), many participants had physical issues and tended to seek advice from others rather than conducting their own research. Hemodialysis patients should receive information on disease and therapy from healthcare professionals in order to successfully manage their condition. For younger patients, more public resources ought to be made available (Li et al., 2014). Furthermore, multiple linear regression indicated that knowledge significantly influenced overall self-management. Subjects with more knowledge noted better self-management. Making decisions requires a solid foundation of correct information. This outcome is consistent with other research (Smith et al., 2010). Smith et al. (2010) stated that individuals tended to seek assistance from others rather than conduct independent research when they encountered problems. Healthcare practitioners should educate hemodialysis patients on disease and therapy in order for them to successfully manage their health (Li et al., 2014). Enhancing health literacy facilitates is another factor affecting CKD self-management and can benefit them (Suarilah & Lin, 2022).

5. Implications and limitations

Adhering to the recommended regimen is the most challenging aspect of CKD self-management. It was discovered that knowledge and education strongly predicted the self-management score. Initiatives to improve patients' capacity to manage their treatment may be guided by our findings. The results of this study highlight the significance of improving illness-specific understanding of CKD to enhance self-management behaviors. Consequently, a better understanding of CKD is essential to enhancing self-management of CKD, particularly in the early stages, boosting human health, and stopping the progression of CKD.

Starting with the fact that all subjects were residents of Padang, West Sumatra, the study had a variety of drawbacks. Second, subjectivity could have been a problem with the self-reported data used in this study. Finally, since this study is cross-sectional, no conclusions about causality can be drawn.

6. Conclusion

Participants in this study who were receiving hemodialysis exhibited subpar self-management skills. It was discovered that factors such as education level, monthly income, employment, knowledge, and self-efficacy impacted self-management. Additionally, emotional management scored highest, and partnership scored lowest on the subscales of self-management knowledge and education were found to be predictors of self-management scores. Future studies should concentrate on analyzing how to develop educational programs that can improve CKD patients' self-management. Nurses and other healthcare providers must evaluate CKD patients' understanding of their disease and should then develop suitable education strategies to improve that knowledge. The employment of such cutting-edge approaches as SMS (Short Message System), shared decision-making, and policymakers must facilitate the utilization of digital media for patient education.

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Author contribution

FM, EH: Involved in the study design.
FM, RM, R: Collected data.
FM, EH: Analyses the data.
FM, EH, RM, R: Draft and revised manuscript

Conflict of interest

Regarding this study, their authorship of this article, and/or its publication, the authors declare that they have no potential conflicts of interest.

References

- Almutary, H., & Tayyib, N. (2021). Evaluating self-efficacy among patients undergoing dialysis therapy. *Nursing Reports*, 11(1), 195-201. <https://doi.org/10.3390/nursrep11010019>
- Ameh, O. I., Udemé E. E., & Andre P. K. (2020). Preventing CKD in low- and middle-income countries: A call for urgent action. *Kidney International Reports*, 5(3), 255-62. <https://doi.org/10.1016/j.ekir.2019.12.013>.
- Chen, Y. C., Chang, L. C., Liu, C. Y., Ho, Y. F., Weng, S. C., & Tsai, T. I. (2018). The roles of social support and health literacy in self-management among patients with chronic kidney disease. *Journal of Nursing Scholarship*, 50(3), 265-275. <https://doi.org/10.1111/jnu.12377>.
- Chen, W. C., Lin, C. C., Wu, C. C., & Song, Y. C. (2021). Psychometric testing of the hemodialysis self-management instrument (HDSMI-18): A confirmatory factor analysis. *Nursing Open*, 8(5), 2832-2839. <https://doi.org/10.1002/nop2.867>.
- Cho, M. K., & Shin, G. (2016). Gender-based experiences on the survival of chronic renal failure patients under hemodialysis for more than 20 years. *Applied Nursing Research*, 32, 262-268. <https://doi.org/10.1016/j.apnr.2016.08.008>
- Curtin, R. B., Bultman Sitter, D. C., Schatell, D., & Chewning, B. A. (2004). Self-management, knowledge, and functioning and well-being of patients on hemodialysis. *Nephrology Nursing Journal*, 31(4), 378-387.
- Denhaerynck, K., Manhaeve, D., Dobbels, F., Garzoni, D., Nolte, C., & De Geest, S. (2007). Prevalence and consequences of nonadherence to hemodialysis regimens. *American Journal of Critical Care*, 16(3), 222-235. <https://doi.org/10.4037/ajcc2007.16.3.222>
- de Quiros, F. G. B., Dawidowski, A. R., & Figar, S. (2017). Representation of people's decisions in health information systems. *Methods of Information in Medicine*, 56(S 01), e13-e19. <https://doi.org/10.3414/ME16-05-0001>.
- Devraj, R., Borrego, M. E., Vilay, A. M., Palden, J., & Horowitz, B. (2018). Awareness, self-management behaviors, health literacy and kidney function relationships in specialty practice. *World Journal of Nephrology*, 7(1), 41-50. <https://doi.org/10.5527/wjn.v7.i1.41>.
- Griva, K., Mooppil, N., Seet, P., Krishnan, D. S. P., James, H., & Newman, S. P. (2011). The NKF-NUS hemodialysis trial protocol-A randomized controlled trial to determine the effectiveness of a self management intervention for hemodialysis patients. *BMC Nephrology*, 12(1), 1-11. <https://doi.org/10.1186/1471-2369-12-4>
- Hafezieh, A., Dehghan, M., Taebi, M., & Iranmanesh, S. (2020). Self-management, self-efficacy and knowledge among patients under haemodialysis: A case in Iran. *Journal of Research in Nursing*, 25(2), 128-138. <https://doi.org/10.1177/1744987120904770>.
- Huong, V. T. T., & Le, N. T. (2015). New practical approaches to estimation of glomerular filtration rate in adult: A review. In: *Paper Presented at the 5th International Conference on Biomedical Engineering in Vietnam*, 46, 78-80. https://doi.org/10.1007/978-3-319-11776-8_66.
- Husain, F., Kusuma, H., & Johan, A. (2020). Effects of peer support program on self-management in patients with end-stage renal disease undergoing hemodialysis. *Nurse Media Journal of Nursing*, 10(2), 171-181. <https://doi.org/10.14710/nmjn.v10i2.26502>
- Indonesian Renal Registry. (2018). *11th report of Indonesian renal registry 2018*. https://www.indonesianrenalregistry.org/data/IRR_2018.pdf. 2018.
- Li, H., Jiang, Y. F., & Lin, C. C. (2014). Factors associated with self-management by people undergoing hemodialysis: A descriptive study. *International Journal of Nursing Studies*, 51(2), 208-216. <https://doi.org/10.1016/j.ijnurstu.2013.05.012>.

- Lin, C. C., Tsai, F. M., Lin, H. S., Hwang, S. J., & Chen, H. C. (2013). Effects of a self-management program on patients with early-stage chronic kidney disease: A pilot study. *Applied Nursing Research*, 26(3), 151-156. <https://doi.org/10.1016/j.apnr.2013.01.002>.
- Lorig, K. R., & Holman, H. R. (2003). Self-management education: History, definition, outcomes, and mechanisms. *Annals of Behavioral Medicine*, 26(1), 1-7. https://doi.org/10.1207/S15324796ABM2601_01
- Lorig, K. R., Sobel, D. S., Stewart, A. L., Brown, B. W., Jr, Bandura, A., Ritter, P., Gonzalez, V. M., Laurent, D. D., & Holman, H. R. (1999). Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalization: A randomized trial. *Medical Care*, 37(1), 5-14. <https://doi.org/10.1097/00005650-199901000-00003>.
- Luyckx, V. A., Tonelli, M., & Stanifer, J. W. (2018). The global burden of kidney disease and the sustainable development goals. *Bulletin of the World Health Organization*, 96(6), 414-22. <https://doi.org/10.2471/BLT.17.206441>.
- Mailani, F., Herien, Y., Muthia, R., Tumanggor, R. D., & Huriani, E. (2022). The experiences of patients with chronic kidney disease undergoing dialysis in managing the symptoms. *Malaysian Journal of Medicine and Health Sciences*, 18(SUPP18): 42-50.
- Mailani, F., Muthia, R., Herien, Y., Huriani, E., Chan, C. M., & Abdullah, K. L. (2021). The fluid management experience in patients with chronic kidney disease undergoing hemodialysis in Indonesia: A qualitative study. *Nurse Media Journal of Nursing*, 11(3), 389-403. <https://doi.org/10.14710/nmjn.v11i3.38838>.
- Malini, H., Zhahara, S., Lenggogeni, D. P., & Putri, Z. M. (2022). Self-care and quality of life people with type 2 diabetes during the covid-19: Cross-sectional study. *Journal of Diabetes & Metabolic Disorders*, 21(1), 785-790. <https://doi.org/10.1007/s40200-022-01055-7>
- Moattari, M., Ebrahimi, M., Sharifi, N., & Rouzbeh, J. (2012). The effect of empowerment on the self-efficacy, quality of life and clinical and laboratory indicators of patients treated with hemodialysis: A randomized controlled trial. *Health and Quality of Life Outcomes*, 10, 1-10. <https://doi.org/10.1186/1477-7525-10-115>
- Mousa, I., Ataba, R., Al-ali, K., Alkaiyat, A., & Zyoud, S. E. H. (2018). Dialysis-related factors affecting self-efficacy and quality of life in patients on haemodialysis: A cross-sectional study from Palestine. *Renal Replacement Therapy*, 4(1), 1-12. <https://doi.org/10.1186/s41100-018-0162-y>
- Natashia, D., Yen, M., Chen, H. M., & Fetzer, S. J. (2019). Self-management behaviors in relation to psychological factors and interdialytic weight gain among patients undergoing hemodialysis in Indonesia. *Journal of Nursing Scholarship*, 51(4), 417-426. <https://doi.org/10.1111/jnu.12464>
- Polit, D. F., & Beck, C. T. (2008). *Nursing: Generating and assessing evidence for nursing practice*. Lippincott Williams & Wilkins.
- Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, 60, 1011832. <https://doi.org/10.1016/j.cedpsych.2019.101832>.
- Smith, K., Coston, M., Glock, K., Elasy, T.A., Wallston, K.A., Ikizler, T. A., and K. L. Cavanaugh. (2010). Patient perspectives on fluid management in chronic hemodialysis. *Journal of Renal Nutrition*, 20(5), 334-341. <https://doi.org/10.1053/j.jrn.2009.09.001>
- Stevenson, J., Tong, A., Gutman, T., Campbell, K. L., Craig, J. C., Brown, M. A., & Vincent, W. (2018). Experiences and perspectives of dietary management among patients on hemodialysis: An interview study. *Journal of Renal Nutrition*, 28(6), 411-421. <https://doi.org/10.1053/j.jrn.2018.02.005>
- Suarilah, I., & Lin, C. C. (2022). Factors influencing self-management among Indonesian patients with early-stage chronic kidney disease: A cross-sectional study. *Journal of Clinical Nursing*, 31(5-6), 703-715. <https://doi.org/10.1111/jocn.15930>.
- Thomas, N. (2019). *Renal nursing: Care and management of people with kidney disease*. John Wiley & Sons.
- Van Prooijen, J. W. (2017). Why education predicts decreased belief in conspiracy theories. *Applied Cognitive Psychology*, 31(1), 50-58. <https://doi.org/10.1002/acp.3301>.
- Wang, A., & MA, J. (2005). Self-management behavior and health-related quality of life in Chinese hemodialysis patients. *Chinese Journal of Tissue Engineering Research*, 192-194.

- Wu, S. F. V., Hsieh, N. C., Lin, L. J., & Tsai, J. M. (2016). Prediction of self-care behaviour on the basis of knowledge about chronic kidney disease using self-efficacy as a mediator. *Journal of clinical nursing*, 25(17-18), 2609-2618. <https://doi.org/10.1111/jocn.13305>
- Yusuf, A. H., Suarilah, I., & Rahmat, P. (2017). Relaxation affirmation technique increases self-efficacy of patients with nasopharyngeal cancer. *Jurnal Ners*, 5(1), 29-37. <http://dx.doi.org/10.20473/jn.v5i1.3921>

