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ANALYSIS OF FACTORS RELATED TO INCREASED INTERDYALITIC WEIGHT GAIN (IDWG) IN PATIENTS WITH CHRONIC KIDNEY DISEASES (CKD) IN HEMODIALYSIS UNIT

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ABSTRACT

Weight gain between dialysis times (Intradialytic Weight Gain (IDWG)). IDWG values > 6% of dry body weight can cause various complications. Increased IDWG is influenced by various factors both internal and external. It is important to know the factors that influence IDWG in increasing patient compliance with fluid intake. Objective to determine the factors that influence the increase in IDWG of Chronic Kidney Disease Patients in the Hemodialysis Unit Method: The design of this study is descriptive correlation analysis with a Cross Sectional design. The sample of this study was CKD patients with hemodialysis at Dr. AK Gani Hospital, Palembang, the sample was determined through a total sampling technique, totaling 41 respondents. The research instruments consist of demographic data instruments, namely age, gender, education and marital status, fluid intake questionnaires, stress, thirst using standard questionnaires, family support questionnaires have been tested for validity with r results> r table (0.361), and reliable with r Alpha value of 0.749, self-efficacy questionnaires have been tested for validity with r results> r table (0.361), and declared reliable with r Alpha 0.822, and Body Weight is measured using ISO weight scalesAnalysis to determine the relationship between IDWG and fluid intake, thirst, self-efficacy, stress, family support with the Spearman Sign Rank Rho correlation test. There is a significant relationship between IDWG values and fluid intake (p = 0.001 r = 0.603), there is a relationship between IDWG values and thirst (p = 0.001 r = 0.484). There is no relationship between IDWG values and self-efficacy (p = 0.186 r = 0.244). The relationship between IDWG values and stress showed no relationship (p = 0.206 r = 0.202). The relationship between IDWG values and family support had no relationship with IDWG values (p = 0.976 r = 0.005). The increase in IDWG values is influenced by fluid intake and thirst in hemodialysis patients, the higher the fluid intake and thirst, the greater the increase in IDWG values.

Keywords: chronic kidney diseases; hemodialysis; interdialytic weight gain

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INTRODUCTION

The kidneys are important organs in the body as homeostasis by regulating fluid volume, osmotic and acid-base balance, excretion of metabolic waste, hormonal and metabolic regulation systems.(Darni & Sasmita, 2021).Chronic Kidney Disease (CKD), causes a progressive and irreversible decline in kidney function, called end-stage renal failure. Hemodialysis is considered the most common treatment for end-stage renal failure. In the United States, 64.9% of patients are on dialysis but only 4.8% are on peritoneal dialysis.(Hafezieh et al., 2020).

In Indonesia, hemodialysis therapy is one of the therapies the most widely used renal substitute (82%) in patients with CKD(Kemenkes, 2017). Hemodialysis therapy is performed to remove uremic toxins and regulate the body's fluid and electrolyte balance in patients with CKD. In CKD patients, chronic fluid overload is a common complication in patients with hemodialysis, there are many negative side effects due to excess fluid, namely shortness of breath, edema, hypertension, left ventricular hypertrophy, and in the long term, chronic

volume overload will result in increased cardiovascular events and death.(Lambert et al., 2022).

One of the factors causing death in patients with chronic kidney disease undergoing hemodialysis is due to uncontrolled fluid intake problems. Interdialytic Weight Gain (IDWG) is an indicator of patient compliance with fluid management measured based on dry body weight (Tamaura et al., 2019).The main problem that often occurs in patients undergoing hemodialysis is weight gain between two hemodialysis sessions or what is called Intradialytic Weight Gain (IDWG) (Khusna et al., 2023). An increase in IDWG exceeding 6% of dry body weight is an increase at a dangerous level that can cause complications such as hypotension, cramps, nausea, vomiting, headache, itching, chest pain, back pain, fever and chills. Excessive ultrafiltration (UF), fast and within 4-5 hours during hemodialysis causes hypotensive and hypertensive reactions (Sari et al., 2020).

Weight gain between two dialysis sessions can be caused by various factors, both internal factors including age, gender, education level, thirst, stress, self-efficacy, and external factors, namely family support, social and amount of fluid intake. Health behavior is influenced by several factors, namely predisposing factors such as demographics, thirst, fluid intake, self-efficacy and stress, supporting factors including hemodialysis and health infrastructure(Wahyuni et al., 2019). The role of nurses is very important in supporting and educating patients in limiting fluid intake, by knowing the factors that influence the increase in IDWG in CKD patients with hemodialysis, so that it can increase patient compliance because of long-term care, hemodialysis patients need to make changes in their lifestyle. The purpose of this study was to determine the factors that influence the increase in IDWG in Chronic Kidney Disease Patients in the Hemodialysis Unit.

METHOD

The design in this study was descriptive correlation analysis with a Cross Sectional design. The sample of this study was PGK patients with hemodialysis at Dr. AK Gani Hospital, Palembang, the study sample was determined through a total sampling technique, with PGK patients with hemodialysis aged > 18 years, willing to be respondents, no changes in mental status, patients with an increase in IDWG value ≥2% and exclusion criteria, namely PGK patients with hemodialysis aged <18 years, not willing to be respondents. This study was conducted in February 2024, the study sample consisted of 41 respondents. This study has received an Ethical Appropriate letter from the Hesti Wira Sriwijaya Health Science College Ethics Committee with No. 000763/KEP STIKES HESTI WIRA SRIWIJAYA/2024 dated February 7, 2024. The research instruments consist of demographic data instruments, namely age, gender, education and marital status, fluid intake questionnaires, stress, thirst using standard questionnaires, family support questionnaires have been tested for validity with r results> r table (0.361), and reliable with r Alpha value of 0.749, self-efficacy questionnaires have been tested for validity with r results> r table (0.361), and declared reliable with r Alpha 0.822, and Body Weight is measured using ISO weight scales. Data presentation to determine the characteristics of respondents using frequency distribution. Analysis to determine the relationship between IDWG and fluid intake, thirst, self-efficacy, stress, family support in CKD patients with hemodialysis using the Spearman Sign Rank Rho correlation test.

RESULT

Table 1 analysis of respondent characteristics using frequency distribution shows that the majority of respondents are late elderly (41.5%), most are male (51.2%), and respondents with married status (92.7%).

Table 1.
Respondent characteristics (n= 41)

Respondent Characteristics	f	%
Age		
1. Early Adulthood	2	4.9
2. Late Adulthood	6	14.6
3. Early Elderly	16	39
4. Late Elderly	17	41.5
Gender		
1. Man	21	51.2
2. Woman	20	48.8
Education		
1. SD	2	4.9
2. JUNIOR HIGH SCHOOL	11	26.8
3. SENIOR HIGH SCHOOL	24	58.5
4. College	4	9.8
Status		
1. Marry	38	92.7
2. Not married yet	0	0
3. Widow/Widower	3	7.3
4. College		

Table 2. Shows the relationship between fluid intake, the results of the Spearman's rho test state that there is a significant relationship between fluid intake and IDWG values (p = 0.001). The relationship between fluid intake and IDWG shows a strong relationship with r = 0.603. The results of the Spearman's rho test state that there is a relationship between thirst and IDWG values (p = 0.001). The relationship between thirst and IDWG shows a fairly strong relationship with r = 0.484. The results of the Spearman's rho test state that there is no relationship between self-efficacy and IDWG values (p = 0.186), the relationship between self-efficacy and IDWG shows no correlation with r = 0.244. The relationship between stress and IDWG shows no relationship but a weak relationship with r = 0.202. The results of the Spearman's rho test stated that there was no relationship between stress and IDWG values (p = 0.206). The relationship between family support and IDWG showed no correlation with r = 0.005. The results of the Spearman's rho test stated that there was no relationship with IDWG values (p = 0.976).

Table 2.
Correlation analysis of factors influencing IDWG in CKD patients with hemodialysis

Variables	IDWG						*p-value*	r
		Light		Currently		Heavy			
		f	%	f	%	f	%		
Fluid Intake	Not enough	3	7.4	-	-	-	-	0.001	0.603
	Enough	7	17	12	29.3	1	2.4		
	More	-	-	13	31.7	5	12.2		
Thirst	Light	4	9.7	-	-	-	-	0.001	0.484
	Currently	4	9.7	12	29.4	1	2.4		
	Heavy	2	4.9	13	31.7	5	12.2		
Self Efficacy	Low	3	7.3	7	17	4	9.7	0.244	0.186
	Currently	6	14.6	15	36.6	2	4.9		
	Tall	1	2.4	3	7.4	-	-		
Stres	Light	7	17	16	31	2	4.9	0.206	0.202
	Currently	3	7.4	9	22	4	9.7		
	Heavy	-	-	-	-	-	-		
Family Support	Not enough	6	14.6	12	29.4	4	9.7	0.976	0.005
	Good	4	9.7	13	31.7	2	4.9		

DISCUSSION

The purpose of this study was to identify contributing factors that contribute to increased IDWG. Weight gain between two dialysis (IDWG) is a parameter for fluid and salt intake between two hemodialysis sessions. Increased IDWG values are influenced by internal and external factors. Increased IDWG is influenced by various factors, namely thirst, fluid intake, self-efficacy, stress and family support. From the results of the study, the relationship between fluid intake and IDWG showed a strong relationship with r = 0.603. The results of the Spearman's rho test stated that there was a significant relationship between thirst and IDWG values (p = 0.001). Increased IDWG in hemodialysis patients is caused by lack of patient compliance with fluid restrictions(Safitri et al., 2022). In line with research Zulfikar, et al (2024)stated that non-compliance with fluid restriction leads to increased interdialytic weight gain, which leads to increased cardiovascular burden. Approximately 60%–80% of CKD patients with hemodialysis die due to excessive fluid intake during the interdialytic period. Excessive fluid intake during the interdialytic period can cause edema, ascites, and even pulmonary congestion, so monitoring fluid intake in hemodialysis patients is a primary action that must be considered by nurses(Agastiya & Rismawan, 2024). Restricting fluid intake during two hemodialysis sessions can cause thirst and dry mouth (xerostomia) due to the disease, which causes hemodialysis patients to have difficulty in limiting fluid intake.(Sat Titi Hamranani et al., 2020).

Based on the results of the study, the relationship between thirst and IDWG showed a fairly strong relationship with r = 0.484, the results of the Spearman's rho test stated that there was a relationship between thirst and IDWG values (p = 0.01). Thirst is a sensation that makes someone want to drink, patients with CKD tend to experience xerostomia due to their illness. Thirst is one of the symptoms that often appears in CKD patients with hemodialysis, 68.9% - 86% of CKD patients with hemodialysis experience increased thirst due to xerostomia, increased thirst results in increased fluid intake. Increased fluid intake will cause an increase in IDWG values(Alexander, 2023). StudyWahyuni et al (2024)argues that thirst appears in hemodialysis patients in addition to tending to be hot and uncontrolled water intake in the patient's body, this thirst gives the patient a sensation to drink, increasing fluid intake makes the IDWG value increase. In line with researchMurdaningsih et al (2023)stated that there was a significant relationship between thirst and IDWG (r=0.394, p-value=0.001). StudyCin et al (2024)also stated that the results of the literature review showed that the prevalence of thirst in hemodialysis patients ranged from 6% to 95% of IDWG values, thirst tends to cause dry mouth and result in increased IDWG.

Self-efficacy Spearman's rho test results stated that there was no relationship between self-efficacy and IDWG values (p = 0.186), the relationship between self-efficacy and IDWG showed no correlation with r = 0.244. Self-efficacy in hemodialysis patients is the patient's confidence in undergoing therapy. Self-efficacy is needed to generate self-motivation to be able to control fluids so that it can prevent an increase in IDWG(Murdaningsih et al., 2023). StudyListyaningrum et al (2024)stated that the efficacy value in patients tends to be moderate, this is due to the patient's habits regarding fluid intake, and the unavailability of guidelines in limiting fluids. Good self-efficacy can reduce the IDWG value, because self-efficacy has a direct influence on behavior and lifestyle, but there are many factors that affect self-efficacy so that it can reduce a person's self-confidence, such as environmental factors, namely heat, availability of resources, and declining body conditions.(Listyaningrum et al., 2024).

Another factor that affects IDWG is stress. Stress is one of the psychological impacts on hemodialysis patients. CKD patients with hemodialysis experience problems with physical and mental health, including stress and anxiety due to their illness. Research resultsstated that

there was no relationship between stress and IDWG values (p=0.206). This is not in line with researchAgastiya & Rismawan, 2024which states that there is a positive relationship between stress and IDWG with a p value of 0.001, but the relationship is weak. Stress factors affect self-management in hemodialysis patients, such as limiting fluids and nutrition, and not undergoing treatment routinely. Family support is also a factor that affects IDWG values in hemodialysis patients, family support can be a driving force for behavior in increasing IDWG(Saswati et al., 2020). In this study hThe relationship between family support and IDWG showed no relationship with a p value = 0.976. The study is not in line with the results of the studyRosana et al (2024)states that there is a significant relationship with a p value = 0.003. This is because family support is influenced by various factors consisting of internal factors including age, and emotional, socio-economic factors, cultural background, so that it affects good or bad family support for health.

CONCLUSION

The factors that most influence the increase in IDWG are fluid intake, excessive fluid intake is correlated with increased IDWG values. Thirst is also associated with increased IDWG values, increased thirst will trigger an increase in the amount of fluid intake in CKD patients.

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