



THE OREM SELF-CARE BASED PROTOCOL ON INTERDIALYTIC WEIGHT GAIN (IDWG) IN CHRONIC KIDNEY DISEASE HEMODIALYSIS PATIENTS IN THE HOSPITAL

Ahmad Faiq*, Fery Agusman Motuho Mendrofa, Blacius Dedi

Universitas Karya Husada Semarang, Jl. R. Soekanto No.46, Sambiroto, Tembalang, Semarang, Central Java 50276, Indonesia

*faiq.ahmad776@gmail.com

ABSTRACT

Chronic Kidney Disease (CKD) is a health problem with increasing prevalence in Indonesia and globally. Patients with end-stage CKD generally undergo hemodialysis as replacement therapy, but this is often accompanied by complications such as Interdialytic Weight Gain (IDWG) due to excess fluid between dialysis sessions. Uncontrolled IDWG can lead to hypertension, pulmonary edema, and even heart failure. Therefore, effective nursing interventions are needed to help patients manage IDWG, one of which is through the application of Orem's Self-Care theory. This study aims to analyze the effectiveness of implementing the Orem Self-Care based protocol on IDWG in hemodialysis patients with chronic kidney failure at Dr. Loekmonohadi Hospital, Kudus. The study design used a quasi-experimental approach with a pre-test-post-test control group design. The sample consisted of 84 hemodialysis patients selected using a saturated sampling technique and divided into an intervention group (n=42) and a control group (n=42). Data collection was conducted by measuring the patients' Interdialytic Weight Gain (IDWG) before and after the intervention. The intervention included fluid management education, weight monitoring, and fluid restriction strategies. Data analysis was performed using a paired t-test and a test for differences between groups with a significance level of $p < 0.05$. Before the intervention, the majority of patients were unable to control their IDWG (88.1 % in the intervention group; 81.0% in the control group). After the intervention, 90.5 % of the intervention group achieved IDWG control compared to only 26.2% in the control group. The mean IDWG decreased from 4.99 kg to 3.14 kg, with a significant difference of 1.85 kg ($p < 0.001$). The Orem Self-Care based protocol is effective in reducing IDWG in hemodialysis patients with CKD, increasing patient independence, and potentially preventing complications due to fluid overload.

Keywords: chronic kidney disease; hemodialysis; IDWG; nursing; self-care orem

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INTRODUCTION

Chronic Kidney Disease (CKD) is a public health problem whose prevalence continues to increase globally. According to the World Health Organization (WHO), the prevalence of chronic kidney disease is estimated to reach 10% of the world's population, with the incidence increasing by 8% annually (WHO, 2015). In Indonesia, the 2018 Basic Health Research (Risksdas) recorded a CKD prevalence of 3.8% in the population aged 15 years and older, indicating an increasing trend from 2% in 2013 (Ministry of Health of the Republic of Indonesia, 2018). This condition places a significant burden not only on patients' quality of life but also on the healthcare system.

One of the main therapies for patients with end-stage CKD is hemodialysis. This therapy serves to partially replace the kidney's function in removing metabolic waste and excess fluid. However, hemodialysis does not cure kidney disease and is often accompanied by complications, one of which is Interdialytic Weight Gain (IDWG), which is weight gain due to excess fluid between two dialysis sessions (Smeltzer & Bare, 2015). Uncontrolled IDWG has the potential to cause hypertension, pulmonary edema, and even heart failure, making it a serious problem in the management of hemodialysis patients (Lestari et al., 2018).

Data from the 2018 Indonesian Renal Registry (IRR) shows a consistent increase in the number of new and active hemodialysis patients from year to year. In 2018, more than 132,000 patients underwent hemodialysis in Indonesia, showing a significant upward trend compared to the previous year (PERNEFRI, 2018). This demonstrates the importance of controlling hemodialysis complications such as IDWG, especially since the cost of treating chronic kidney failure is one of the largest components of healthcare expenditures in Indonesia (Infodatin, 2017).

Controlling IDWG requires an active patient role in fluid restriction and a low-sodium diet. However, patient compliance is often low due to a lack of knowledge, motivation, and support in self-care. This is where Orem's Self-Care Theory becomes relevant. Dorothea Orem emphasized the importance of patient independence in meeting self-care needs to maintain health and well-being (Orem, 2001). Applying this theory to hemodialysis patients is expected to improve compliance with fluid restrictions, thereby reducing IDWG.

Several previous studies have supported the effectiveness of education-based interventions in managing IDWG. For example, Ossareh et al. (2014) reported that a self-care education program can improve patient compliance with fluid restrictions. Research in Indonesia also showed similar results, showing that education based on nursing theory improves patients' and families' ability to manage fluid intake and quality of life (Hermalia et al., 2020). However, specific research on the application of the Orem Self-Care protocol to IDWG is still limited, particularly in the Kudus area.

This study aims to analyze the effectiveness of the implementation of the Self-Care Orem theory-based protocol on *Interdialytic Weight Gain* (IDWG) in hemodialysis patients with chronic kidney failure at Dr. Loekmonohadi Kudus Regional General Hospital. Specifically, this study focuses on identifying IDWG before and after the intervention, comparing the differences in IDWG between the intervention group that received the Self-Care Orem protocol and the control group without intervention, and assessing the extent to which the implementation of the protocol can increase patient independence in controlling fluid intake so as to prevent complications due to fluid overload.

METHOD

This study used a quasi-experimental design with a pre-test–post-test control group design approach. This design was chosen because it allows researchers to compare the results of interventions between the treatment and control groups without full randomization (Sugiyono, 2019). The study population was all 84 patients with chronic kidney failure undergoing hemodialysis at Dr. Loekmonohadi Hospital, Kudus. The sampling technique used was saturated sampling, so that the entire population was sampled. The sample was then divided into two groups: 42 patients in the intervention group who received the Orem Self-Care-based protocol, and 42 patients in the control group who did not receive the intervention.

Data collection in this study was conducted through questionnaires distributed directly to respondents related to the variables studied, namely the application of Orem's theory which includes self-care, self-care deficit, nursing system and Interdialytic Weight Gain (IDWG) in hemodialysis patients with chronic renal failure. Data collection was conducted by measuring the patients' Interdialytic Weight Gain (IDWG) before and after the intervention. The Orem Self-Care Protocol provided included fluid management education, weight monitoring, and fluid restriction strategies in accordance with the principles of Orem's self-care theory (Orem, 2001). Furthermore, data analysis used a paired t-test to determine the difference in IDWG before and after the intervention in each group, as well as a test for differences between groups. to assess the overall effectiveness of the protocol. The validity and reliability of the instrument were tested, while data analysis was

performed with a significance level of $p < 0.05$ as the basis for statistical decision-making (Dahlan, 2014).

RESULT

Respondent Characteristics

Table 1.
Characteristics of Respondents

Characteristics		f	%
Sex Type	Man	52	61.9
	Woman	32	38.1
Age	≤ 30 Years	4	4.8
	31-50 Years	32	38.1
	≥ 51 Years	48	57.1
Education	Elementary School	5	6.0
	Junior High School	18	21.4
	Senior High School	52	61.9
	D3	1	1.2
	D4/Bachelor	8	9.5
Work	ASN	1	1.2
	Mother House Ladder	25	29.8
	Employee	1	1.2
	Students	1	1.2
	Self-employed	56	66.7

Based on table 1 distribution frequency based on type sex known that part big respondents various sex man as many as 52 respondents (61.9%), some of them big respondents aged ≥ 51 years year as many as 48 respondents (57.1%), some of them big respondents 52 respondents (61.9%) had a high school education, most of them big respondents have work self-employed as many as 56 respondents (66.7%)

IDWG Prior to Orem Self Care Protocol Training

Table 2.
IDWG Before Orem Self-Care Protocol Training Based on Respondent Groups

Group	IDWG	
	Succeed Control	Unable to Control
Intervention Group	5 (11.9%)	37 (88.1%)
Control Group	8 (19.0%)	34 (81.0%)

Based on table 2, it is known that the majority of the proportion of IDWG before training in both the intervention and control groups were not successful in controlling IDWG, respectively for the intervention group (88.1%) and the control group (81.0%).

IDWG After Orem Self Care Protocol Training

Table 3.
IDWG After Orem Self Care Protocol Training Based on the Respondent Group

Group	IDWG	
	Succeed Control	Unable to Control
Intervention Group	38 (90.5%)	4 (9.5%)
Control Group	11(26.2%)	31 (73.8%)

Self Care Protocol training, the proportion of successful IDWG control in the intervention group (90.5 %) was greater than in the control group (26.2%).

IDWG Analysis Before and After Orem Self Care Protocol Training

Table 4. IDWG Analysis Before and After Protocol Training Orem Self Care

IDWG	Mean	t	df	p-value
Before Training	4.99			
After Training	3.14	7,176	83	0.000

Based on table 4, the IDWG analysis before and after the *Orem Self Care Protocol training* shows that the $p\text{-value} = 0.000 < 0.05$, which means there is a difference in the average IDWG before training (4.99) and after being given the Orem Self Care Protocol training (3.14), so the Orem Self Care Protocol training is effective in reducing IDWG with a difference in the average IDWG before and after training of 1.85.

DISCUSSION

Based on the research results, it was found that there was a difference in IDWG before and after Orem Self Care Protocol training in hemodialysis patients ($p\text{-value} = 0.000$) and Orem Self Care Protocol training was effective in reducing IDWG with an average difference in IDWG before and after training of 1.85. The implementation of Orem's Self-Care-based protocol in the management of Interdialytic Weight Gain (IDWG) in hemodialysis patients showed significant results in improving control over fluid and dietary restrictions. This is in line with the results of a study conducted by Wasalamah, Alim, and Widyandana (2022), the Supportive Educative Nursing Intervention (SENI) which uses Orem's theory focused on increasing patient self-efficacy in adhering to fluid restrictions. This intervention was shown to significantly reduce IDWG in the intervention group compared to the control group ($p = 0.000$) (Wasalamah, Alim, & Widyandana, 2022). This indicates that Orem's theory, with its approach emphasizing self-care, is effective in helping patients better manage their condition, especially when it comes to difficult-to-follow fluid restrictions.

Furthermore, research conducted by Mardiyah and Zulkifli (2023) found that patient adherence to diet and fluid intake is highly dependent on their ability to perform self-care. This study revealed that although most patients adhered to overall dietary guidelines, a subset of patients experienced difficulty managing fluid intake, leading to non-adherence to fluid restrictions (Mardiyah & Zulkifli, 2023). Therefore, self-care-based protocols are highly relevant for improving patient adherence by motivating them to participate directly in their health management process.

In this regard, it is important to note that the education and information provided to patients plays a crucial role in the success of the intervention. Research by Alikari et al. (2018) indicates that educational interventions that include knowledge about the importance of fluid and dietary restrictions have a positive impact on patient compliance. Although increased knowledge is not always directly related to compliance, research findings suggest that increased compliance can improve patients' quality of life (QoL), which in turn positively impacts the management of IDWG (Alikari et al., 2018).

Research conducted by Sulistyaningsih et al. (2020) also illustrates the significant challenges faced by hemodialysis patients in adopting necessary lifestyle changes after starting hemodialysis therapy. Their findings indicate that many patients experience difficulties in the early stages of therapy due to their limited knowledge of fluid management and diet. In this regard, the role of nurses is crucial in providing support and encouraging patients to be more active in their self-care (Sulistyaningsih, Nurachmah, Yetti, & Hastono, 2020). This underscores the importance of Orem's theory-based interventions, which emphasize patient empowerment through self-care.

Furthermore, research by Sajjadi, Ghafourifard, and Tayebi Khosroshahi (2025) highlights the importance of individualized patient education in improving adherence to fluid restriction. Their study found that individuals who received education tailored to their personal circumstances and

preferences demonstrated greater improvement in IDWG control. This aligns with the findings of this study, where a more personalized and targeted approach can help hemodialysis patients better understand and manage fluid restriction more effectively (Sajjadi, Ghafourifard, & Tayebi Khosroshahi, 2025).

However, although Orem's Self-Care theory and education-based interventions have proven effective, the results of this study indicate that other factors such as age, education, and social support also influence the success rate of interventions. Younger patients and those with lower education levels often show lower adherence to fluid and dietary restrictions. Therefore, in addition to focusing on self-care-based interventions, it is important for healthcare providers to consider these external factors when designing more comprehensive education programs.

CONCLUSION

The results of the study showed that the implementation of the Self-Care Orem -based protocol was proven to be effective in reducing Interdialytic Weight Gain (IDWG) in hemodialysis patients with chronic kidney failure at Dr. Loekmonohadi Kudus Regional Hospital. After the intervention, the proportion of patients who successfully controlled IDWG increased significantly in the intervention group (90.5 %) compared to the control group (26.2%), with an average decrease in IDWG of 1.85 kg ($p < 0.001$). These findings strengthen the evidence that education and interventions based on nursing theory, especially Self-Care Orem, are able to increase patient independence in controlling fluid intake and preventing complications due to fluid overload.

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