

# Effect Of Fluid Restriction Education To Interdialytic Weight Gain In Hemodialysis Patients In Rsud Dr. M. Yunus Bengkulu

Septiyanti

Jurusan Keperawatan Politeknik  
Kesehatan Kementerian  
Kesehatan Bengkulu, Indonesia  
septiyanti\_74@yahoo.co.id

Msy. Martikasari

Jurusan Keperawatan Politeknik  
Kesehatan Kementerian  
Kesehatan Bengkulu, Indonesia  
masayutikaa@gmail.com

Gusnilawati

Jurusan Keperawatan Politeknik  
Kesehatan Kementerian  
Kesehatan Bengkulu, Indonesia

***Abstract-Renal function decrease less than 60% led to the inability of the kidney to run the function. Efforts to maintain order not to decrease the function lower with dialysis twice in a week. To create restriction of fluid intake in hemodialysis patient by monitoring the intake and output per day measured using interdialytic weight gain. The aim of this study to determine the effect of fluid restriction education to interdialytic weight gain in a hemodialysis patient. The method used a quasi-experiment designed pretest and post-test with the control group. The control group was observed by leaflet, and the intervention group was observed and educated with booklet. The sample was taken using a simple random sampling (38 patients). The analysis used parametric by using the paired samples t-test to see the difference of pre-post average in each group, independent sample t-test to see the effect of education on interdialytic weight gain between groups. The result of the analysis shows that fluid restriction education affects interdialytic weight gain. The provision of education with good guidelines can improve the knowledge of patient about fluid intake, b7 calculating the fluid balance and synchronize the daily fluid requirement based on the calculation of fluid balance.***

***Key words-Chronic Kidney Disease (CKD), interdialytic weight gain (IDWG), education, fluid restriction***

## I. INTRODUCTION

Chronic Kidney Disease (CKD) is an irreversible decrease in following kidney function. Where the body's ability fails to maintain metabolism and fluid and electrolyte balance,

causing uremia (urea retention and other nitrogen waste in the blood) (Smeltzer & Bare, 2008).

Based on data from the *World Health Organization* (WHO) said the growth in the number of kidney failure patients in 2013 had increased by 50% from the previous year while those who were known to get treatment only 25% and 12.5% were treated well (Indrasari, 2015).

The results of the data collection of the Indonesian Nephrology Association (Pernefri) in 2012, stated that as many as 83% of patients with kidney failure were in the terminal stage. This is supported by the results of Riskesdas (2013), stating that age  $\geq 15$  years diagnosed with chronic kidney failure is 0.2%.

Kidney damage or decreased kidney function of less than 60% causes the inability of the kidneys to remove toxins and residual products from the blood which are characterized by albuminuria (Black & Hawks, 2009; Klinger, 2010). It is essential to be preventive in maintaining kidney function so that there is no further decline in kidney function, namely dialysis or kidney transplantation. (Setyohadi, 2016).

The majority of patients who get hemodialysis therapy in Indonesia are dialysis in 2 times a week, and 4-5 hours of dialysis, which means that the body must bear excess fluid between two therapies (YGDI, 2008). The effectiveness of limiting the amount of fluid CKD patients depends on several things, including the patient's knowledge of the amount of fluid that can be drunk. Efforts to create restrictions on fluid intake in CKD patients can be made by monitoring *output intake* fluid per day, concerning fluid intake of CKD patients depending on the amount of urine 24 hours (Pasticci et al., 2012).

Linberg (2010) stated that adherence in limiting fluid intake was measured using IDWG which was manifested by an increase in body weight between two consecutive dialysis sessions, depending on fluid intake and sodium. The body's tolerable IDWG

was no more than 1.5 kg or 3% dry weight that is body weight without excess fluid.

Data obtained at dr. M. Yunus Bengkulu from the hemodialysis room showed approximately 150 patients per month. Based on the results of a preliminary study of 21 patients the results were obtained, namely patients with IDWG values > 3% dry body weight as many as 16 people. While the other 5 patients had IDWG <3%, which were 2.5, 2.0, 1.7, 0.9, 0.8. Based on the results of direct interviews with patients, most patients said it was recommended to limit fluid, but this was conveyed at the first exposure to HD. Patients also said they had not been taught to calculate the balance of body fluids so that if the patient felt thirsty, the patient would drink more than the recommended portion of the fluid.

Lack of patient knowledge and lack of information provided by the officers is one of the triggers for the increase in IDWG values. Providing education with clear guidelines can improve patient knowledge about daily fluid intake. Education that can be given to patients is limiting fluid consumption as much as *Insensible Water Losses* (IWL) plus the amount of urine / 24 hours (Smeltzer & Bare 2008; Hinkle *et al.* 2008).

## II. METHODS

Experimental quasi-research was used in this study. The design of this study used pretest-posttest with the control group. The population in this study were all chronic kidney patient in hemodialysis room in the working area of RSUD Dr. M. Yunus Bengkulu. Random design sampling technique is used in this research. The subject in this research is that 38 respondents had IDWG score up 3% were divided into two groups: a control group and an intervention group.

The location of the research is in the working area of RSUD Dr. M. Yunus Bengkulu. The study was conducted in February 2018. The data collection technique is performed by IDWG measurement for three times with SMIC Health scales tool. Data analysis was performed by Paired Sample T-test and Independent Sample T-test in statistic test.

## III. RESULT

**Table 1 Respondent Characteristics of Hemodialysis Patients at RSUD Dr. M. Yunus Bengkulu**

<b>Karakteristik</b>	<b>Control</b>	<b>Intervensi</b>
<b>Age</b>		
Mean	48,26	48,84
Median	52,00	50,00
SD	10,230	7,960
Min-Maks	29-62	32-61
CI <i>for</i>	43,33-	45,01-
<i>Mean 95%</i>	53,19	52,68
<b>Sex</b>		
Male	13 (68,4%)	12 (63,2%)
Female	6 (31,6%)	7 (36,8%)
<b>Education</b>		
Elementary	1 (5,3%)	0 (0,00%)
junior HS	5 (26,3%)	6 (31,6%)
Senior HS	7 (36,8%)	6 (31,6%)
University	6 (31,6%)	7 (36,8%)
<b>Long time undergoing</b>		
< 1 year	6 (31,6%)	2 (10,5%)
> 1 year	13 (68,4%)	17 (89,5%)

Characteristics of respondents in this study aimed to describe hemodialysis patients to be studied, including age, sex, education last and extended undergoing hemodialysis.

The results revealed the characteristics of respondents in this study seen from age, gender, education level and duration of hemodialysis. In the control group respondents at least up to a maximum of 29 years to 62 years and an average of 48.26 years.

Whereas in the intervention group the minimum age is up to a maximum of 32 years to 61 years and averages 48.84 years. The majority of respondents in the control group were men (68.4%) in the intervention group also men (63.2%). The level of education in the control group was mostly high school (36.8%), and in the intervention group, the majority were PT (36.8%). Hemodialysis duration was mostly in the control group > 1 year (68.4%), as well as in the intervention group > 1 year (89.5%).

**Table 2 Difference in Value IDWG Before and After Intervention on intervention group and control group**

<b>IDWG</b>	<b>Kontrol</b>	<b>Intervensi</b>
-------------	----------------	-------------------

Before		
Mean	4,095	4,037
Median	4,200	3,800
SD	0,6587	0,6930
Min-Maks	3,1-5,2	3,1-5,9
CI for Mean	3,777-	3,703-
95%	4,412	4,371
After		
Mean	4,105	3,353
Median	4,200	3,400
SD	1,1764	0,7090
Min-Maks	2,0-6,0	2,3-5,0
CI for Mean	3,538-	3,011-
95%	4,672	3,694
Difference		
Mean	-0,011	0,684
Median	0,000	0,800
SD	1,142	0,817
Min-Maks	-1,7-2,9	-1,0-2,10
CI for mean	-0,5608-	0,291-
95%	0,5397	1,078

Based on table 2 the IDWG value in the control group before being given treatment showed an average of 4.095 with a minimum value of 3.1 and a maximum of 5.2. Whereas in the intervention group 4.037 with a minimum value of 3.1 and a maximum of 5.2. Furthermore, the post-education IDWG value in the control group showed an average of 4.105

with a minimum value of 2.6 and a maximum of 6.0. Whereas in the intervention group showed an average of 3,353 with a minimum value of 2.3 and a maximum of 5.0.

The average IDWG value in the control group, before being given treatment was 4,095 and after being treated was 4,105. The difference from the mean before and after treatment in the control group was -0.011. In the intervention group before the intervention was 4,037, while after being given intervention the average IDWG value was 3,353. The difference between the two averages is 0.684.

**Table 3 Analysis of Differences in Average IDWG Values Before and After Giving Treatment to Control Groups and Intervention**

IDWG	Control		intervention	
	(n=19)		(n=19)	
	Mean	p value	Mean	p value
Before	4,095		4,037	

		0,968		0,002
After	4,105		3,353	

*\*Paired Sample T-Test*

In the control group with 19 respondents it was seen that the average (mean) IDWG before being given education was 4,095 and the average IDWG after the third measurement was 4,105. After being given treatment the *p-value* of 0.968 means that there is no significant difference between the average IDWG before and after the treatment is given.

In the intervention group with 19 respondents, it can be seen that the average (mean) IDWG before being given education was 4,037 and the average IDWG after the third measurement was 3,353. The *p-value* of 0.002 means that there is a significant difference between the average IDWG before and after being given education.

**Table 4 Analysis of the Difference in the Average IDWG Value in the Intervention Group and Group Control**

Group (n=38)	IDWG			
	Mean	SD	t-test	p value
Intervensi	0,684	0,8167	2,157	0,038
Control	-0,011	1,1416		

*\*Independent Sample T-Test*

Table 2 shows that 19 respondents were educated with the booklet media and the explanation had an average difference of ID68 0.684. While 19 respondents who were given a leaflet without direct explanation had an average difference of IDWG -0.11, from the results of statistical tests, it can be seen that there are significant differences between IDWG respondents from the population given education and direct explanation with respondents who were only given leaflets without direct explanation (*p-value* = 0.038). So it can be concluded that the provision of fluid restriction education influences the *interdialytic weight gain* (IDWG) value in hemodialysis patients in RSUD dr. M. Yunus Bengkulu.

**IV. DISCUSSION**

1. Overview of Hemodialysis Respondent Characteristics in Dr. M. Yunus Bengkulu  
The results showed that the highest number of respondents who underwent hemodialysis in

the control group was 43.33 to 53.19 years, and the intervention group was between 45.01 to 52.68 years which meant that patients undergoing hemodialysis in the study this is an average of > 40 years old. As the age goes by, kidney function also decreases, where after 40 years there will be a progressive decrease in glomerular filtration rate up to 70 years of age, which is approximately 50% of normal (Smeltzer & Bare; 2002).

The sex of the most respondents in this study were men as much as 68.4% in the control group and 63.2% in the intervention group. This is in line with research conducted by Ghalia (2016) which explains that the majority of male respondents were 79 people (65.8%). The same results were also obtained from Desitasari's research (2013) from 36 respondents, 22 of whom were male (61.1%). The highest respondent education in this study was high school education. Namely, seven people (36.8%) in the control group and the intervention group were universities, namely seven people (36.8%). The results of this study are supported by a theory where knowledge is an important domain to shape individual actions, individual behavior based on knowledge will be longer than those that are not based on knowledge (Notoatmodjo, 2005).

Respondents in this study had undergone hemodialysis for more than a year as much as 68.4% in the control group and 89.5% in the intervention group. The duration of the patient undergoing hemodialysis affects knowledge, attitudes and diet compliance. Each patient needs different times at the level of knowledge. In line with Sandra's (2012) study, out of 36 respondents, 20 respondents (55.6%) had extended hemodialysis > 12 months.

2. Overview of the average value of *Interdialytic Weight Gain* Respondents in the Hemodialysis Room of RSUD Dr. M. Yunus Bengkulu

The average IDWG in the control group before being treated was 4.095 while in the intervention group was 4.037. After being given treatment, the average IDWG was 4.105 in the control group, and 3.353 in the intervention group. The results of this study illustrate that respondents who were given education actions with direct explanation and only given leaflets decreased IDWG value.

The decrease in IDWG of patients in the treatment group was due to the provision of education with particular booklet media. Education is an interactive process that encourages learning, and learning is an effort to add new knowledge, attitudes, and skills through strengthening practitioners and specific experiences (Potter & Perry, 2009).

3. Differences in values *Interdialytic Weight Gain* (IDWG) Before and After Education

The mean IDWG value in the control group, the average value before being treated was 4.095 and after being given treatment was 4.105. The difference from the mean before and after treatment in the control group was -0.011. In the intervention group before the intervention was 4.037, while after being given intervention the average IDWG value was 3.353. The difference between the two averages is 0.684.

The results of the analysis of the effect of health education in the control group on the differences in IDWG has known the mean value of the measurement results after being given treatment does not decrease with the *p-value* of 0.968 means there is no significant difference between the average IDWG before and after the treatment.

Observations and interviews of researchers in patients in the hemodialysis room found that patients had received fluid restriction education when they first arrived at, but at this time the patient did not remember the information conveyed because it was never repeated. Patients sometimes claim to disobey fluid restrictions that are recommended to drink. The nurse in hemodialysis hospital also did not understand much about fluid restriction procedures, only the head of the room and several competent nurses who understood fluid restriction procedures.

The results of the analysis of the effect of giving health education to the intervention group on the difference in IDWG is known the mean value of the measurement results after being given a decreased intervention (in the third measurement) obtained *p-value* (0.002) <  $\alpha$  (0.05) So that there is a difference in IDWG.

This is in line with Rifka's (2015) study which revealed differences in body weight in the intervention group before and after the intervention ( $p = 0.009$ ). In line with the study

of Hidayati (2012) which states that the average decrease in IDWG in the intervention group there was a difference from 51.90 decreased to 51.33 ( $p = 0.003$ ). Non-compliance in limiting fluid intake can lead to excessive IDWG which can be prevented by regulating good fluid intake to prevent excessive IDWG (Denhaerynck, et; Istanti, 2013).

Another study conducted by Desitasari (2013) also found a relationship between the level of knowledge of adherence to the diet of CRF patients undergoing hemodialysis showed there was a significant relationship where someone who has good knowledge will easily apply his knowledge to positive behavior and can control himself in overcoming problems face it.

4. Effect of Direct Explanation and Giving Leaflets on Decreasing IDWG Value of Hemodialysis Patients IDWG values

The mean difference obtained after intervention in the control group was -0.011 and in the intervention group was 0.684. It can be concluded that there are differences in the average IDWG values in the control and intervention groups that were given education with direct explanation and only given leaflets ( $p 0.038$ ).

According to the behavior concept of L. Green, one of the influences on one's health is one's knowledge and attitude. Knowledge certainly plays an important role, because by having a good knowledge of the limitation of liquidation, patients can decide what attitudes can be done to overcome health problems, in particular, reducing the risk of increasing IDWG (Umrahwati et al., 2013).

Several factors influence the difference in the effectiveness of education with the media booklet accompanied by a direct explanation and only given leaflets, the first factor is the extension factor which includes lack of preparation, lack of mastery of the material that will be explained by the giver of the material, display that is less convincing the target, less used language understood by the target, the material giving voice is too small, and the material appearance is monotonous so boring.

The second factor is the target factors which include the too low level of target education, too low target socioeconomic level, long-embedded

beliefs and customs so that it is difficult to change it, and the target living conditions that do not allow behavior change. Then the third factor is the counseling process which includes the time of counseling that is not in accordance with the time desired by the target, the place of counseling is done in a place near the crowd so that it disrupts the counseling process, the number of targets is too much, teaching aids in health education is lacking, the method used less precise, and the language used is difficult to understand by the target (Notoatmojo, 2007).

#### V. CONCLUSION

There is an effect of education with booklet media and accompanied by an explanation that influences the *interdialytic weight gain* (IDWG) value of hemodialysis patients at RSUD Dr. M. Yunus Bengkulu.

#### REFERENCES

- [1] Black, M. J. & Hawks, H. J., 2009. *Medical, surgical nursing: clinical management for continuity of care, 8<sup>th</sup> ed.* Philadelphia: W.B. Saunders Company
- [2] Indrasari, Nur, Denita. 2015. *Perbedaan kadar ureum dan kreatinin pada pasien gagal ginjal kronik berdasarkan lama menjalani terapi hemodialisa di RS PKU Muhammadiyah Yogyakarta.*  
<http://www.perbedaankadarureumdankreatininpa.sienggk/hemodialisa.rspkumhmmadiyah.ygt>
- [3] Kidney Disease Outcome Quality Initiative (KD.OQI) 2002. *KDOQI Clinical Practise Guidelines for Chronic Kidney Disease: Evaluation, Classification, and Stratification*
- [4] Leggat, J.E, Orzol SM., Hulbert S., Golper TA., Jones CA., Held PJ., & Port FK. 1998. *Noncompliance in hemodialysis: predictors and survival analysis.* Diakses dari <http://www.ncbi.nlm.nih.gov/pubmed/9669435>
- [5] Lindberg, M. 2010. *Excessive fluid overload among hemodialysis patient: prevalence, individual characteristics, and self-regulation fluid intake.* Universitas upsaliensis uppsala 9-73
- [6] Lolyta, R., Isonah., Solechan,. 2011. *Analisis faktor yang mempengaruhi tekanan darah hemodialisis pada klien gagal ginjal kronik.*  
<http://ejournal.stikestelogorejo.ac.id/ejournal.in.dex.php/ilmukeperawatan/article>.

- [7] Rifka, H., Sofiana, N., & Yesi, H. 2015. *Pengaruh pendidikan kesehatan secara individual tentang pembatasan cairan terhadap pengetahuan pembatasan cairan dan IDWG pada pasien hemodialisis. Vol 2. No 2.*
- [8] Smeltzer, Suzzane C, dan Bare, Brenda G. 2002. *Buku Ajar Keperawatan Medikal Bedah Brunner dan Suddarth (Ed. 8. Vol. 1).* EGC. Jakarta
- [9] Suryarini, Y. 2010. *Hubungan peningkatan berat badan antara dua waktu hemodialisis dengan kualitas hidup pasien hemodialisis.* [Tesis]. Depok: Universitas Indonesia.