Journal Educational of Nursing (JEN)
Vol. 6 No. 2 – July – December 2023; page 104-111
p-ISSN: 2655-2418; e-ISSN: 2655-7630
journal homepage: https://ejournal.akperrspadjakarta.ac.id
DOI : 10.37430/jen.v6i2.175

Article history:
Received: May 27th, 2023
Revised: June 12th, 2023
Accepted: July 26th, 2023

The Duration of Hemodialysis Treatment and comorbidity with Adherence to Fluid Restristion in patient Undergoing Hemodialysis: A Correlational Study

Ana Khumaeroh, Wilda Fauzia
STIKes RSPAD Gatot Soebroto
e-mail: anakhumaeroh95@gmail.com

Abstract

To achieve successful hemodialysis, patients with End Stage Renal Disease (ESRD) must follow comprehensive treatment including: diet, medication use, fluid restriction and presence of hemodialysis. Previous research has identified that fluid restriction is the most difficult regimen to adherence. Limiting fluid intake is very important done For avoid complications excess fluid Which can cause interdialytic weight gain (IDWG) and has an impact on cardiovascular complications such as congestive heart failure, pulmonary edema and even death. A part from complications due to excess fluid, patients are also at risk of experiencing complications from hypertension, anemia, decreased immunity and nervous disorders. This can influence patient perceptions and impact behavior on compliance with hemodialysis therapy regimens . Another thing that can affect compliance is ongoing psychosocial stress due to having to undergoing hemodialysis therapy for a long time, causing a negative impression or attitude towards fluid restriction management. Apart from that, other research stated that the duration of hemodialysis was correlated with non-compliance with fluid restrictions . Based on this phenomena, researchers are interested in analyzing the relationship between length of time undergoing hemodialysis and comorbidities with fluid restrictions in hemodialysis patients. This study aims to determine the relationship between duration of hemodialysis treatment and comorbidity with adherence to fluid restrictions in patients hemodialysis. This study used a cross sectional design with consecutive sampling on 121 respondents. Data collection with demographic sheets and fluid compliance questionnaires. Next, a bivariate analysis was carried out using Chi-Square. The majority of respondents were in the age range 41-60 years namely 82 respondents, the majority of respondents were men As many as 75 respondents , the education level of the respondents showed that most were at the high school level, around 59 respondent , The majority of respondents had undergoing hemodialysis within a period of 1-5 years. Characteristics respondents other is comorbidity where majority own comorbidity <3 as much as many as 100 respondents. bivariate analysis showed that there was a significant relationship between duration of hemodialysis treatment and adherence to fluid restrictions (p=0.033), however there was no significant relationship between comorbidities and adherence to fluid restrictions (p= 0.560). There is a significant relationship between duration of hemodialysis treatment and adherence to fluid restrictions, but there is no significant relationship between comorbidities and adherence to fluid restrictions.

Keywords : End Stage Renal Disease; Hemodialysis; Fluid adherence; comorbidity; Duration of Hemodialysis Treatment

Introduction

End Stage Renal Disease (ESRD) is problem health public in Indonesia Which in a way directly affects the burden of morbidity and mortality. Prevalence of End Stage Renal Disease in In Indonesia, based on *Indonesian Renal Registry* (IRR) data, there is an increase in prevalence in range time year 2013-2018 namely from as much 0.2% become 3.8% per 100 resident (Kemenkes RI, 2018). End Stage Renal Disease is a condition of complete loss of kidney function progressive finally resulting in the need for renal replacement therapy, namely dialysis or transplantation (Vaidya & Aeddula, 2021). In Indonesia, the prevalence of patients with End Stage Renal Disease more Lots Which undergo therapy hemodialysis And prevalence This has increased in the five years from 2013 to 2018, namely from 21,759 to 132,142 patients (PERNEFRI, 2018).

Patient with end stage renal disease undergoing hemodialysis 2-3 time in a week with time 4-5 O'clock or most A little 10-12 O'clock in One Sunday (*Australia and New Ziland Dialysis and Transplant Registry* , 2016; Black & Hawks, 2014). To achieve successful hemodialysis, patients must follow comprehensive treatment, which includes four factors, namely diet, drug use, fluid restrictions and the presence of hemodialysis (Chorinda, 2016; Arad et al., 2021). Previous research has identified fluid restriction as the most difficult regimen to adhere to (Mollaoglu & Kayatas, 2015; Ozen et al., 2019). The results of the study also showed that around 69% of hemodialysis patients did not comply with fluid restrictions (Beerendrakumar, Ramamoorthy & Haridasan, 2018). Apart from that, according to research by Mailani & Bakri (2019) there is 59.1% patient No obedient to restrictions fluid. Results Another study by Melliana & Wiarsih (2013) at Fatmawati Hospital Jakarta showed compliance fluid in patients hemodialysis only 32% whereas 68% No obedient.

Limiting fluid intake is very important performed by hemodialysis patients for avoid complications excess fluid Which can cause interdialytic weight gain (IDWG) and has an impact on cardiovascular complications such as congestive heart failure, pulmonary edema and even death (Jia et al., 2016). Apart from complications due to excess fluid, patients undergoing hemodialysis are also at high risk of experiencing other complications such as hypertension, anemia, decreased immunity and nervous disorders (Yang & He, 2020).

The presence of these diseases can influence patient perceptions and impact behavior on compliance with hemodialysis therapy regimens (WHO, 2003). Another thing that can influence compliance with fluid restrictions in hemodialysis patients is ongoing psychosocial stress due to having to undergo hemodialysis therapy for a long period of time, which can cause a negative impression or attitude towards treatment management, one of which is compliance with fluid restrictions (Chironda & Bengu, 2016).

A part from that, other studies state that the length of time undergoing hemodialysis is correlated with non-compliance with fluid restrictions (Chan et al., 2012; Hadi, 2015). However, there is research that contradicts these results, showing that the length of time a patient undergoes HD has no effect on compliance with fluid restrictions (Izzati & Annisha, 2016 & Hakiki, 2015).

Based on this phenomenon, researchers are interested in analyzing the relationship between length of time undergoing hemodialysis and comorbidities/comorbidities with compliance with fluid restrictions in hemodialysis patients.

Methods

This research uses a *cross sectional approach* namely conducting subject observations in one go and then look at the relationship between the observed variables. Retrieval technique sample used *consecutive sampling* that is all subject Which undergoing hemodialysis Which criteria inclusion And exclusion.

Criteria inclusion among them is patient can communicate cooperatively, willing to be a respondent, aged over 18 years, able reading and writing, undergoing hemodialysis 2 times per week and the patient has undergone routine HD minimum 3 months. The exclusion criteria in this study were patients who experienced cognitive impairment.

The number of samples in this study was 121 respondents. Furthermore data collection tools, namely using research instruments including: is sheet characteristics respondents and questionnaires obedience fluid .

Univariate analysis was carried out to get an overview of each variable such as age, gender, highest level of education, length of time on hemodialysis, comorbidities and fluid compliance. Meanwhile, bivariate tests were carried out using the *Chi Square statistical test* to analyze the relationship between length of time on HD and comorbidities with fluid compliance.

Result

Analysis Univariate

Table 1. Distribution of Respondents Based on Age, Gender, Education, Duration of Hemodialysis Treatment, Comorbidities and Adherence to Fluid Restriction

Variables and Categories	Frequency (n)	Presentation (%)
Age		
18 – 40 years	16	13.2
41– 60 years	82	67.8
>60 years	23	19.0
Total	121	100
Gender		
Man	75	62
Woman	76	38
Total	121	100
Level of education		
Didn't finish elementary school/didn't go to school elementary school	7	5.8
Junior High School	16	13.2
Senior High School	19	15.7
College	59	48.8
	20	16.5
Total	121	100
Comorbidity		
Have <3 diseases	100	82.6
Have >3 diseases	21	17.4
Total	121	100
Duration of Hemodialysis Treatment		
< 1 year	42	34.7
1-5 years	71	58.7
6-10 years	5	4.1

Variables and Categories	Frequency (n)	Presentation (%)
>10 years	3	2.5
Total	121	100
Adherence to Fluid Restriction		
Adherence	96	79.3
Non Adherence	25	20.7
Total	121	100

Table 1 shows that 82 of the 121 respondents (67.8%) were aged between 41-60 years. Majority respondents manifold sex man as much 75 person (62%). Level education part big a bye SENIOR HIGH SCHOOL as much 59 person (48.8%). Comorbidity Which partially owned by the respondent big ishad <3 comorbidities, namely 100 people (82.6%). Most of the respondents have undergoing HD during 1-5 years as much 71 people (58.7%), Furthermore, 96 people (79.3%) adherence to fluid restriction and 25 people (20.7%) did non adherence to fluid restrictions.

Analysis Bivariate

Table 2. Analysis of the relationship between Duration of Hemodialysis Treatment and Adherence to Fluid Restriction (n=121)

		Adherence to Fluid Restriction				**F**	**%**	***P Value***
		Adherence		**Non Adherence**				
		N	**%**	**N**	**%**			
Duration of Hemodialysis Treatment	<1 year	34	90.7	9	9.3	43	100	0.033*
	1-5 years	49	71	20	29	69	100	
	6-10 years+ >10 years	8	88.9	1	11.1	9	100	
Total		96	79.3	25	20.7	121	100	

*significant α< 0.05

Table 2 shows the results of the analysis of the relationship between Duration of Hemodialysis Treatment and fluid adherence. It was found that 34 respondents with duration of HD <1 year complied with fluid restrictions (90.7%). Respondents with a duration of HD 1-5 years who adhered to fluid restrictions were 49 people (71%). Furthermore, respondents with a duration of HD 6-10 years and >10 years who adhered to fluid restrictions were 8 people (88.9%). Analysis of the results at alpha 5% showed that there was a significant relationship between the duration of hemodialysis treatment and adherence to fluid restriction (p= 0.033, α=0.05).

Table 3. Analysis of the Relationship between Comorbidity and Adherence to Fluid Restriction (n=121)

		Adherence to Fluid Restriction				F	%	*P Value*
		Adherence		Non Adherence				
		N	%	N	%			
Comorbidity	Have disease <3	78	64.5	22	18.2	100	100	0.560
	Having disease ≥ 3	18	14.9	3	2.5	21	100	
Total		96	79.3	25	20.7	121	100	

*significant α< 0.05

The results of the analysis of the relationship between comorbidities and fluid adherence showed that respondents who had <3 disease complications and adhered to fluid restrictions were 78 people (64.5%) while 18 respondents who had ≥ 3 disease complications complied with fluid restrictions. (14.9%). The results of the analysis at alpha 5% showed that there was no significant relationship between complications and adherence to fluid restriction (p=0.560, α=0.05).

Discussion

In the results of the analysis of respondent characteristics, it was found that the majority of respondents were by age middle (41-60 years). These results are in accordance with *Indonesian Renal Registry* (IRR) data for 2018 2018, the highest proportion of hemodialysis patients in Indonesia is in the 45-64 year category with proportion 59.15%. Fail kidney terminal can happen on all range age. Increasing age function kidney will experience decline on age 30 year around 20%

Forevery subsequent 10 year increase in age so that at ages over 40 years the proportion the incidence of end stage renal disease is more common (Al-Wahsh et al., 2020; Yanai et al., 2013). In previous research conducted by Agustina (2018) on a kidney failure population terminal Which undergo HD Also showing that average age majority on range age (40-60 year) that is with proportion 65% And age >65 year 40.9%.

Based on type sex, majority respondents on study This is man that is as many as 75 people (62%). The proportion of the results of this study shows the same thing with data reported by *the Indonesian Renal Registry* in 2018, namely end stage renal disease patients the majority with male gender as much as 57%.

Men are said to be less likely consistent with health behavior compared to women so that it becomes a predisposing factor occurrence of GGT in men (Abbate et al., 2012).

The characteristics of respondents based on education showed that the majority were high school (40.8%). Aligned with results study other Which done by Melastus (2018) And Muliani et al (2020) majority respondents with education senior high school that is with percentage 46.7% And 41%. Besides That Other research conducted by Naalweh et al (2017) in Palestine also shows this the thing that The same that is majority respondents have level education equivalent Senior High School as much as 94.5%.

In this study, it was found that the majority of respondents had undergoing hemodialysis for 1-5 years (58.7%). The same characteristics as the data reported by IRR (2015) are long The majority of patients undergoing hemodialysis were in the range < 1 year (33.3%) and 1-3 years (13.6%).

Furthermore, the characteristics of the respondents in this study were that the majority had <3 comorbiditiesnamely as many as 100 respondents. Where the majority of respondents with hypertension, namely as many as 74 respondents, followed by diabetes mellitus with 39 respondents. These results are in agreement with IRR data (2018) that the comorbidities of end stage renal disease patients are still dominated by hypertension And diabetes mellitus. Hypertension Still become disease accompanying the most that is with percentage 51% followed with disease accompanying diabetes mellitus as much 21%.

The results of the bivariate test showed that there was a significant relationship between the duration of

hemodialysis treatment and adherence to fluid restriction (p= 0.033, α=0.05). Similar research results were obtained in research conducted by Siagian et al (2021),

Pahrul & Andamsari (2018), namely that there was a significant relationship between duration of hemodialysis treatment and compliance with fluid restrictions. The longer a patient undergoes hemodialysis, the more knowledge they will gain, which will influence compliance with fluid restrictions (Diyah, 2015).

Meanwhile, different results were found in research conducted by Husna (2018) & Nurudin (2018) that there was no significant relationship between duration of hemodialysis treatment and fluid adherence. A long period of undergoing HD will force patients to change daily habits in their lives, thereby causing psychosocial stress which can cause negative impressions or attitudes towards the therapeutic management of HD patients (Chironda & Bengu, 2016).

Furthermore, in the results of the bivariate test analysis of the relationship between comorbidities and adherence to fluid restriction, it was found that there was no significant relationship between comorbidities and adherence to fluid restriction (p=0.560, α=0.05).

The same results were obtained in research conducted by Agustina (2018) but different from research conducted by Alosaimi et al (2016) where comorbidities were significantly related to adherence with HD therapy. The research used 2 types of measuring instruments for comorbidity, namely numerical and categorical scales. Based on the number of comorbidities, it shows that there is a significant relationship with compliance.

The use of number categories with categories of no comorbidities, less than three and more than or equal to three did not show any relationship with adherence. The relationship between the type of comorbidity and compliance was also found to be a relationship between diabetes mellitus and cardiovascular disease which had a significant relationship with compliance.

According to IRR data (2018), the highest comorbidities or comorbidities in end stage renal disease patients are hypertension with a percentage of 51%, followed by DM at 21%. The results of the study showed that there was no relationship between comorbidities and fluid adherence.

The presence of comorbidities is a stressor for patients that will affect daily life. Disease is a complex phenomenon that has a negative impact on life. When an individual is diagnosed or has a disease, the individual will go through the stages of illness until they reach the healing stage, namely the patient learns to let go of the sick role and return to the sick role and function before the illness and reaches social function readiness.

The stages of illness include the stage of experiencing symptoms, the stage of assuming the sick role where the patient goes through the stage of accepting the illness and seeking medical help so that the patient will feel better. Next, the patient enters the stage of contact with health services, receiving advice and suggestions from health professionals, then entering the healing stage or releasing the sick role, returning to pre-illness functions and readiness for social function (Irwan, 2017).

Based on this, it can be concluded that hemodialysis patients with comorbidities will still be able to carry out hemodialysis therapy regimens such as fluid adherence if the patient has gone through the stages of illness.

Conclusions

There is a significant relationship between duration of hemodialysis treatment and adherence to fluid restrictions, but there is no significant relationship between comorbidities and adherence to fluid restrictions.

References

1. Abbate, R., Mannucci, E., Cioni, G., Fatini, C., & Marcucci, R. (2012). *Diabetes and sex: from pathophysiology to personalized medicine.* Intern Emerg Med. 2012 Oct;7 Suppl 3:S215- 9. doi: 10.1007/s11739-012-0804-y. PMID: 23073860.
2. Agustina, F., Yetti, K., Sukmarini, L. (2019). *Contributing factors to hemodialysis adherence in Aceh, Indonesia*. Enferm Clin. 2019;29:238-242. doi:10.1016/j.enfcli.2019.04.028
3. Al-Wahsh, H., Lam, N. N., Liu, P., Quinn, R. R., Fiocco, M., Hemmelgarn, B., Tangri, N., Tonelli, M., & Ravani, P. (2020). *Investigating the Relationship Between Age and Kidney Failure in Adults With Category 4 Chronic Kidney Disease*. Canadian Journal of Kidney Health and Disease, 7. https://doi.org/10.1177/2054358120966819
4. Anita, D. C., & Novitasari, D. (2017). Kepatuhan Pembatasan Asupan Cairan Terhadap Lama Menjalani Hemodialisa. In Prosiding Seminar Nasional & Internasional (Vol. 1, No. 1).
5. Beerendrakumar, N., Ramamoorthy, L., & Haridasan, S. (2018). *Dietary and Fluid Regime Adherence in Chronic Kidney Disease Patients.* Journal of Caring Sciences, 7(1), 17-20. doi:10.15171/jcs.2018.003
6. Black, J.M., & Hawks,J.H. (2014). *Keperawatan Medikal Bedah*: *Manajemen Klinis untuk hasil yang diharapkan*. Edisi 8 Buku 2. jakarta: Salemba medika.
7. Chan, Y. M, Zalillah, M.S., & Hii, S.Z (2012). *Determinants of compliance behaviors among patients undergoing hemodialysis in malaysia*. PLoS ONE, 7(8), 1-7. http://doi.org/10.1371/journal.pone.0041362.
8. Chironda, G., & Bhengu, B. (2016). *Contributing Factors to Non-Adherence among Chronic Kidney Disease (CKD) Patients: A Systematic Review of Literature. Medical & Clinical Reviews,* 02(04). https://doi.org/10.21767/2471-299x.1000038
9. Hadi, S., Wantonoro. (2015). Hubungan Lama Menjalani Hemodialisis Dengan Kepatuhan Pembatasan Asupan Cairan Pada Pasien Gagal Ginja Kronis Di Rs Pku Muhammadiyah Unit II Yogyakarta. Sekolah Tinggi Ilmu Kesehatan ‘Aisyiyah Yogyakarta, Yogyakarta
10. Irwan. (2017). *Etika dan Perilaku Kesehatan*. CV Absolut Media. Yogyakarta.
11. Jia, S., Huang, B., Chu, Y., Lu, Y., & McArthur, A. (2016). *Management of non-adherence to fluid intake restrictions in hemodialysis patients in a tertiary hospital: A best practice implementation project*. JBI Database of Systematic Reviews and Implementation Reports,14(8), 309-322. https://doi.org/10.11124/JBISRIR-2016-003046
12. Melastuti, E., Nafsiah, H. & Fachrudin, A. (2018). *Gambaran Karakteristik Pasien Hemodialisis Di Rumah Sakit Islam Sultan Agung Semarang*. Jurnal Ilmiah Kesehatan Rustida, 4(2), pp 518-525.
13. Melliana, R. (2013). *Hubungan*

kepatuhan pembatasan cairan terhadap terjadinya overload pada pasien gagal ginjal kronik post hemodialisa di rumah sakit Fatmawati. 1-12.

14. Melliana, R. (2019). *Hubungan kepatuhan pembatasan cairan terhadap terjadinya overload pada pasien gagal ginjal kronik post hemodialisa di rumah sakit Fatmawati.* Jurnal Ilmiah Keperawatan Orthopedi Vol. 3 No.1 https://ejournal.akperfatmawati.ac.id
15. Mollaoğlu, M., & Kayataş, M. (2015). Disability is associated with nonadherence to diet and fluid restrictions in end-stage renal disease patients undergoing maintenance hemodialysis. International Urology & Nephrology, 47(11), 1863–1870. https:// doi.org/10.1007/s11255-015-1102-1
16. Muliani, R., Jundiah. R.S., Intan, N., Megawati, S.W., & Said. F.B.M. (2021). *Adherance of Self Care Management Among Hemodialysis Patients.* The Malaysian Journal Of Nursing. https://doi.org/10.31674/mjn.2021.v12i03.007
17. Naalweh,K.S., Barakat, M.A., Sweileh, M.W., Al-jabi,S.W & Zyoud, S.H. (2017). Treatment adherence and perception in patients on maintenance hemodialysis: a cross sectional studyfrom palestina. BMC Nephrology, 18(178), 1-10. https://doi.org/10.1186/s12882-017-0598-1
18. Nurudin, A & Sulistyaningsih, D.R. (2018). Hubungan lama menjalani terapi HD dengan Kepatuhan asupan Cairan Pada Pasien Gagal Ginjal Kronik. Jurnal Ilmu Keperawatan Medikal Bedah. Doi: https://doi.org/10.32584/jikmb.v1i1.74
19. Ozen, N., Cinar, F. I., Askin, D., Mut, D., & Turker, T. (2019). Nonadherence in Hemodialysis Patients and Related Factors: A Multicenter Study. The journal of nursing research : JNR, 27(4), e36. https://doi.org/10.1097/jnr.0000000000000309
20. Pahrul, D & Andamsari, R.R. (2018). Lamanya Hemodialisis dengan Kepatuhan Pembatasan Asupan Cairan dan Nutrisi Pada Pasien Gagal Ginjal Kronik. Jurnal Ilmiah Multi Science Kesehatan. Doi: https://doi.org/10.36729/bi.v9i2.130
21. PERNEFRI. (2018). 11th Report Of Indonesian Renal Registry 2018. Irr, 1–46. https://www.indonesianrenalregistry.org/data/IRR 2018.pdf
22. Siagian, Y., Alit, D.N. & Suraidah. S.(2021). *Analisis Faktor yang Berhubungan dengan Kepatuhan Pembatasan Cairan Pasien Hemodialisis*. Jurnal Menara Medika. DOI: https://doi.org/10.31869/mm.v4i1.2801
23. Vaidya, S.R., Aeddula, N.R. (2021). *Crhonic Renal Failure. In: StatPearls (Internet) Treasure Island (FL)*: StatPearls Publishing; 2021 Januari. Chronic Renal Failure - StatPearls - NCBI Bookshelf (nih.gov)
24. Worl Health Organization. (2003). *Adherence to Long Term Therapies: Evidence for action*. http://doi.org/10.1016/S1474-5151(03)00091-4
25. Yang, J., &He, W. (2020). *Chronic Kidney Disease; Diagnosis and Treatment:* Springer ISBN 978-981-32-9130-0 ISBN 978-981-32-9131-7 (eBook) https://doi.org/10.1007/978-981-32-9131-7