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INCIDENT OF INTRADIALYTIC HYPERTENSION AND QUALITY OF LIFE IN HEMODIALYSIS PATIENT

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ABSTRACT
Intradialytic hypertension is an often overlooked complication during hemodialysis, yet it possesses the potential to increase morbidity and mortality among CKD patients undergoing routine hemodialysis, indirectly impacting their quality of life. This study aims to analyze the occurrence of intradialytic hypertension and its impact on the quality of life of hemodialysis patients. Employing a Case-Control design, the research subjects consisted of patients with intradialytic hypertension as the case group and those without intradialytic hypertension as the control group. The study population comprised CKD patients undergoing hemodialysis at DR M. Djamil Padang Hospital. The sampling technique employed was convenience sampling, with a total sample size of 44 individuals, evenly divided into two groups of 22 patients each (hypertension and non-hypertension). Data analysis included both univariate and bivariate analyses. The questionnaire utilized was KDQOL-SF version 1.3. Bivariate analysis results indicated a difference in the quality of life of hemodialysis patients between those with and without intradialytic hypertension (IHD). Activation of educational initiatives and the utilization of educational media, such as audio-video materials and leaflets provided by various Healthcare Professionals (HCPs), are recommended to enhance the quality of life of hemodialysis patients.

Keywords: hemodialysis; intradialytic hypertension; incident; quality of life

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INTRODUCTION

Chronic kidney disease (CKD) is one of the prevailing global health issues. The estimated global prevalence of CKD reaches 13.4%, and individuals with End-Stage Renal Disease (ESRD) require renal replacement therapy, estimated between 4,902 and 7,083 million individuals(Borges et al., 2020; Lv & Zhang, 2019). According to data from the Centers for Disease Control in 2019, 15% (37 million) of the adult population in the United States has chronic kidney disease, with even 9 out of 10 individuals unaware of their condition. There are 726,000 (2 out of 1,000 people) living with chronic kidney disease, undergoing dialysis, or having kidney transplantation, with 20 people succumbing to it every day(Anggraini. Y.D, 2016; Hidayangsih et al., 2023; Kovesdy, 2022). The prevalence of chronic kidney disease in Indonesia at the age of 15 is 2% per millet or approximately 99,800 people, with a 3.8% increase in 2018. Available data indicates that every year, 200,000 Americans require dialysis due to chronic kidney disease, meaning 1140 out of a million Americans undergo dialysis. Worldwide, around 2 million people receive dialysis annually. The available data suggests

that the number of patients receiving renal replacement therapy reaches 2.5 million and is estimated to increase to 5 million by 2030(Ayu & Antari, n.d.; Kwon et al., 2022).

Intradialytic hypertension is the increase in blood pressure that occurs from the beginning to the end of the hemodialysis process(GeorgiNos, P.I., Sarafidis, P.A, 2015; Chazot & Jean, 2010). A patient's blood pressure may be normal at the start of hemodialysis, but it later increases, leading to hypertension during and at the end of hemodialysis. Quality of life is an individual's perception of their ability, limitations, symptoms, and psychosocial aspects of life within the cultural context and value system to fulfill their roles and functions. Decreased quality of life in hemodialysis patients is also associated with increased mortality, morbidity, and length of hospital stay(Abd Elhafeez et al., 2012; Kraus et al., 2016). Research data specifically describes intradialytic hypertension as an intradialytic complication that is often overlooked; intradialytic hypertension is a fairly well-known complication with an incidence of 5-15% in CKD patients undergoing routine hemodialysis, yet it has not received much attention. Inrig et al. found that patients with intradialytic hypertension have higher chances of hospitalization and death within 6 months.

Intradialysis hypertension (IDHT) is reported to be quite common in Nigeria, and interruptions or discontinuation of dialysis can lead to suboptimal dialysis doses, reduced quality of life (QOL), and increased morbidity and mortality. Changes in intradialytic blood pressure often result in inadequate dialysis doses, necessitating steps to improve it(Kim, Kim, Yoo, & Kim, 2023; Uduagbamen & Kadiri, 2021). This study aims to analyze the occurrence of Intradialytic events and the quality of life of hemodialysis patients using the KDQOL 1.3 method.

METHOD

This study employed a Case-Control design. The research subjects consisted of patients with intradialytic hypertension as the case group and patients without intradialytic hypertension as the control group. The study population comprised CKD patients undergoing hemodialysis at RSUP M. Djamil Padang. The sampling technique utilized was convenience sampling. The sample size was determined using the hypothesis test formula, resulting in a total of 44 individuals, with 22 patients in each group (hypertension and non-hypertension). The inclusion criteria for the sample in this study were CKD patients who had undergone hemodialysis regularly twice a week for a minimum of two months, patients who experienced Intradialytic Hypertension ≥ 2 sessions of Hemodialysis, conscious, compos mentis, and cooperative patients willing to participate as respondents. The exclusion criteria for this study were patients experiencing delirium, shock, and active gastrointestinal bleeding. Before data collection, this research had undergone ethical review by the ethics committee of RSUP Dr. M. Djamil Padang, with approval number LB.02.02/5.7/474/2023. Data analysis in this study included univariate and bivariate analyses. Before conducting bivariate analysis, normality testing was performed using the Shapiro-Wilk test. The questionnaire used was KDQOL-SF version 1.3. We are using SPSS to conduct validity and reliability testing, reliability testing using Cronbach’s Alpha. Subsequently, data with normal distribution were tested using independent t-tests, while non-normally distributed data were tested using the Mann-Whitney test.

RESULTS

Table 1.
Demographic features and clinical characteristics of subjects (N=44)

Variable	**f**	**%**
Gender, f(%)		
Male	24	(54.5)
Female	20	(45.5)
Education, f(%)		
Lower	38	(86.4)
Higher	6	(13.6)

Table 2.
Mean Quality of Life Scores of Patients Undergoing Hemodialysis

Scale	Mean	Stan. Dev.
Social Support	84.09	21.85
Hemodialysis Staff Encouragement	93.75	10.61
Patient Satisfaction	65.91	21.85

Table 3.
The Relationship Between the Incidence of Intradialytic Hypertension and the Quality of Life of Hemodialysis Patients

Dimension Quality of Life	Hypertension		P value
	Intradialytic	Non Intradialytic	
Impact of Kidney Disease (Mean±SD)	64,06 ±6.63	75.52 ±17.72	0.016*
Burden of Kidney Disease Median (Min-Max)	34,38 (6,25-62,50)	46,88 (0,00-62,50)	0,028#

Table 4.
The Relationship Between the Incidence of Intradialytic Hypertension and the Quality of Life of Hemodialysis Patients Based on Characteristics

Dimension Quality of Life	Gender	Marital Status	Work	Age	Frequency of HD	Comorbidities	Education
Symptoms	0.005*	0.252	0.166	0.603	0.412	0.968	0.326
Burden	0.272	0.029*	0.085	0.393	0.484	0.604	0.31
Cognitive Function	0.31	<.001*	0.078	0.99	0.67	0.186	0.028*

Table 5.
Validity Testing Using SPSS

Variable	Question	R Count	R Table	Conclusion
Symptoms	1	.392**	0,297	Valid
	2	.574**		Valid
	3	.375*		Valid
	4	.584**		Valid
	5	.464**		Valid
	6	.640**		Valid
	7	.708**		Valid
	8	.646**		Valid
	9	.795**		Valid
	10	.361*		Valid
	11	.672**		Valid
	12	.332*		Valid

Variable	Question	R Count	R Table	Conclusion
Impact	1	.723**	0,297	Valid
	2	.572**		Valid
	3	.772**		Valid
	4	.735**		Valid
	5	.691**		Valid
	6	.716**		Valid
	7	.581**		Valid
	8	.659**		Valid
				Valid
Burden	1	.641**	0,297	Valid
	2	.733**		Valid
	3	.807**		Valid
	4	.759**		Valid
				Valid
Status	1	.989**	0,297	Valid
	2	.986**		Valid
				Valid
Cognitive	1	.680**	0,297	Valid
	2	.759**		Valid
	3	.694**		Valid
				Valid
Social Interaction	1	0,147	0,297	Invalid
	2	.834**		Valid
	3	.522**		Valid
				Valid
Sex	1	.944**	0,297	Valid
	2	.940**		Valid
Dialysis	1	.806**	0,297	Valid
	2	.787**		Valid
Sleep Quality	1	.738**	0,297	Valid
	2	-0,273		
	3	.474**		Valid
	4	.450**		Valid
				Valid
Social Support	1	.922**	0,297	Valid
	2	.893**		Valid
				Valid
	1	.411**	0,297	Valid
	2	.671**		Valid
	3	.692**		Valid
	4	.647**		Valid
	5	.819**		Valid
	6	.546**		Valid
	7	.564**		Valid
	8	.767**		Valid
	9	.759**		Valid
	10	.707**		Valid
Mentally	1	.755**	0,297	Valid
	2	.887**		Valid
	3	.847**		Valid

Table 6.
Reliability Testing using SPSS with Cronbach's Alpha Methods

Variable	Cronbach's Alpha	Items	Conclusion
Symptoms	0,791	12	Reliabel
Impact	0,844	8	Reliabel
Burden	0,715	4	Reliabel
Status	0,97	2	Reliabel
Cognitive	0,513	3	Non-Reliable
Social Interaction	-0,337	3	Non-Reliable
Sex	0,873	2	Reliabel
Sleep Quality	-1,054	4	Non-Reliable
Dialysis	0,422	2	Non-Reliable
Social Support	0,781	2	Reliabel
Physique	0,856	10	Reliabel
Mentally	0,775	3	Reliabel

DISCUSSION

Characteristics of Subjects Undergoing Hemodialysis at RSUP Dr. M. Djamil Padang

The study results indicate that the majority of respondents are male, with an average age of 51 years and a duration of hemodialysis of approximately 10 years. Most respondents are married, with the lowest level of education, and having occupations, as well as having comorbidities. The findings of this study are consistent with those of (Noorratri, Margawati, & Dwidiyanti, 2017), where both men and women have the risk of developing chronic kidney disease (CKD). Still, the tendency for men is greater than for women, as men consume supplements that can trigger systemic diseases leading to kidney dysfunction (Istanti, 2019). According to the theory, kidney failure can occur at any age and has different causes (Novitasari, 2015). At a young age, kidney failure can occur due to chronic dehydration or nephrotoxic substances. Consumption of foods or beverages containing nephrotoxic substances accelerates kidney cell damage(Barnett & Cummings, n.d.). In older adults and the elderly, anatomically, the ability of kidney cells to grow starts to decline, and kidney cell function begins to deteriorate (Saryono & Handoyo, 2006). According to (Smeltzer & Bare, 2002), after age 40, there is a progressive decrease in glomerular filtration rate (GFR) until 70, by approximately 50%. Tubular function, including reabsorption and concentration ability, also decreases. This results in kidney failure. Many patients are detected to have kidney failure after the age of 40. The educational characteristic results show that most respondents have the lowest level of education, with 38 people (86.4%). This study's findings are supported by (Zumerli, 2014) research states that 51 people (48.6%) have low education. This means that patients with higher education will have better knowledge, allowing them to control their health problems more effectively.

The Quality of Life Profile of Hemodialysis Patients at RSUP Dr. M. Djamil Padang

The research results regarding the quality of life profile of hemodialysis patients show that the average scores of the 13 quality of life domains obtained from the KDQOL SF 1.3 analysis indicate that staff encouragement and social support have the highest scores, consistent with the study conducted by (Armiyati, Hadisaputro, Chasani, & Sujianto, 2021). The emotional quality of life score has the lowest score, wherein the researchers note various factors influencing the quality of life of hemodialysis patients, including age, education level, and comorbid chronic conditions such as hypertension. Patients with specific health conditions and characteristics may experience lower emotional well-being. The physical and emotional quality of life scores in dialysis patients in Oman are nearly half of the normal human quality of life scores, indicating that hemodialysis patients experience significantly lower emotional well-being compared to the general population.

The Relationship Between the Incidence of Intradialytic Hypertension and the Quality of Life of Hemodialysis Patients

The research results explain that there is a difference in the quality of life of chronic kidney disease (CKD) patients between the incidence of intradialytic hypertension and non-intradialytic hypertension. There are significant differences in the domains of kidney disease impact and disease burden. This underscores the crucial role of nurses in educational interventions and motivation to promote the improvement of hemodialysis patients' quality of life. Patients with hypertension tend to have lower quality-of-life scores. This is consistent with the study conducted by (Çelik, Çıkrıkçı Işık, Usul, Cenci, & Şahin, n.d.; Zhang et al., 2016), which also shows a significant relationship between frequent intradialytic hypertension and poor quality of life in two dimensions: kidney disease symptoms and discomfort, as well as the impact of kidney disease on life. This highlights the importance of managing and preventing intradialytic hypertension to improve patient outcomes and quality of life.

The Identification of the Relationship Between the Incidence of Intradialytic Hypertension and the Quality of Life Hemodialysis Patients Based on Characteristics

The research results regarding the relationship between the incidence of intradialytic hypertension and the quality of life of hemodialysis patients based on characteristics, particularly in the symptom dimension by gender, indicate a significant relationship with quality of life (QOL), consistent with the study by (Mujais et al., 2009). However, this differs from the findings of (King & Crane, 2009), who found that the characteristics of hemodialysis patients did not have a significant relationship with quality of life (QOL). Furthermore, the research results regarding the relationship between the incidence of intradialytic hypertension and the quality of life of hemodialysis patients based on characteristics, particularly in the cognitive function domain, can be explained by the decreased cerebral blood flow in hemodialysis patients, leading to cognitive impairment affecting treatment adherence and dialysis programs (Chu et al., 2022). Changes in cerebral blood flow play a crucial role in cognitive impairment in hemodialysis patients, possibly due to uremia in chronic kidney disease (CKD).

Most respondents undergoing hemodialysis have low education levels, which aligns with Riyanto's (2011) study. Researchers assume that education level influences individuals' behavior in seeking care and treatment for their illnesses, as well as deciding on actions to address their health problems. Based on bivariate analysis, there are differences in the quality of life of kidney disease patients between the incidence of intradialytic hypertension and non-intradialytic hypertension. The subsequent researchers are expected to further enhance this study by focusing on patients with uniform characteristics.

CONCLUSION

In RSUP M. Djamil Padang, hemodialysis patients with intradialytic hypertension are mostly male, with an average age of 51 years and predominantly low educational attainment. All respondents are married, employed, and have comorbidities. The quality of life profile of hemodialysis patients indicates that the average scores of the 13 quality of life domains obtained from the KDQOL SF 1.3 analysis show that staff encouragement and social support have the highest scores. There is a difference in the quality of life of hemodialysis patients with the occurrence of intradialytic hypertension (IHD) compared to those without intradialytic hypertension (IHD).

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