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The Interplay between Dialysis and High Blood Pressure

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Abstract

The word dialysis in the propagandize is known to perform a function of the kidney, which is filtering waste and excessive fluid from the blood of patients with late-stage renal failure. Hypertension has been identified as one of the causes of kidney diseases, while on the other hand, renal failures will cause hypertension. The observation that dialysis increases and decreases BP in many patients points to differential symptomatic and pathophysiological contributions. There are many lacunae in our knowledge of the management of high blood pressure occurring in dialysis settings. Most of the evidence is limited by short follow-ups, occasional blood pressure readings, and fluctuating interdialytic periods. Blood pressure tends to rise with the initiation of hemodialysis, and the increase usually continues progressively with further sessions.

Objective: The causative agents for kidney failure were also found using a descriptive-analytic approach within this article. therefore interested in investigating whether having cannulated patients on dialysis stand up and move about could provide some insight into the relationship between blood pressure and control of the kidneys. In this research, we aim to clarify whether there is potentially an action of the elevation of the blood pressure (BP) that is associated with a phenomenon like dialysis hypotension.

Materials and Methods: A questionnaire was given out to 110,000 research subjects suffering from renal failure. Collection: Collection was obtained for two months among patients with kidney failure, with a collection ratio ranging between 40.9% for Al-Hosseini Hospital, 30% for Turkish Hospital, and 29.1% for Babylon Hospital Iraqi patients. They are aged between five and eighty years in both genders. RFT Test: Kidney Function Tests and Electrolytes Testing: Electrolytes' tests. Normal BP blood pressure is systolic under 140 mmHg and diastolic less than 90 mmHg.

Results: Therefore, this study's Cronbach's alpha coefficient yielded a value of 0.876, signifying that there was a high level of internal consistency, thus affirming the suitability of the instrument used during this study in distributing questionnaires to its sample individuals. Discussion: Prominent conclusions reached by authors include: According to our findings, there is an obvious relationship between dialysis and hypertension; patients who have kidney problems and undergo regular dialysis suffer more from high blood pressure than those who don't do it at all; and different factors lead to increased levels of BP among dialysis patients, including malnutrition or absence of exercise.

Keywords: R.F.T. (Renal Failure Test), kidney failure BP blood pressure hypertension.

*** Introduction**

Dialysis is a must for individuals with advanced kidney failure because their kidneys can no longer perform the function of filtering waste and excess fluid from their blood (17). The known fact is that high blood pressure causes kidney diseases, and in turn, kidney damage leads to high blood pressure (1). High blood pressure emanating from kidney disease can be managed through dialysis. This is because the production of renin hormone by a healthy kidney plays an important role in controlling hypertension. Once the kidneys fail, renin levels rise, leading to high blood pressure (2). Cases like these are associated with other factors such as heredity, lifestyle, or diet that may influence high BP. However, knowledge about dialysis's relationship with BP helps us control this chronic illness better and improves the quality of life in patients. Pathogenesis As the CKD stage progresses, population-based studies have shown an increased prevalence of hypertension (3–4). Hence, non-dialysis patients show a 70% prevalence rate of hypertension

(5), while there are 60%–90% dialyzed CKD patients with hypertension (6). Inadequate reduction in BP occurs among almost 87% of hypertensive individuals suffering from CKD (7). High blood pressure due to chronic renal failure and end-stage renal disease where regular dialysis becomes necessary can be difficult to control so that it remains within normal limits even on dialysis. Structural changes lead to increased Na retention via aldosterone angiotensin systems' activation. sympathetic nervous system excitation Endothelial dysfunction and erythropoietin-stimulating substance use account for why these people suffer from elevated BP when compared to healthy subjects having normal renal function (8–9). The current consensus is that each mechanism raises Bp via vascular processes. Decreased aortic compliance along with higher peripheral or systemic vascular resistance and/or extracellular fluid expansion can cause it (8–10). Nevertheless, much research work has not been done on the causes of hypertension in CKD failure (11). Importantly, high Bp may appear during or after dialysis and result in its BP elevation in the future. Fluid overload is a result for some patients on dialysis to develop high Bp, accounting for about 15% cases among them and being dependent on different factors like aging (12). Such people would include those having less dry weight and creatinine levels and those who take many drugs against high blood pressure BP. In addition, the coexistence of regressive hypertension CKD magnifies a considerably higher risk of CD that contributes to morbidity and mortality rates mostly across all patients with CKD (13). Any intervention to reduce BP appears to be beneficial in diminishing cardiovascular risks as well as all-cause mortality rates within the CKD population (14–16). A descriptive analytical approach was used to illustrate the connection between CKD and increased BP.

*** Methodology**

In each of the two months, the researchers collected one hundred and ten samples from patients diagnosed with kidney failure. The sample collection rates for Al-Hosseini Hospital were 40.9%, while 29.1% were recorded for both Babylon and Turkish Hospitals. They were aged between five and eighty years, with males and females being in that range. Sample Collection: Venous blood was drawn from the participants under study using a

three-milliliter syringe; all the blood was transferred into a gel tube, which was then left at room temperature for fifteen minutes before it was centrifuged at a velocity of three thousand revolutions per minute (rpm) for about ten minutes to separate serum that was aspirated by pipette for RFT and electrolyte tests. Renal Function Test (RFT): Kidney function analysis devices used in this case are Auto Chemistry Analyzer/Dirue Company devices. Electrolytes test: SmartLyte.plas is an example of electrolytes test equipment; hence, it will be used here. Bp is measured in mmHg units. The readings always come in pairs with the upper or systolic pressure first, followed by the diastolic pressure or lower number (normal Bp systolic under 140 mmHg and diastolic under 90 mmHg). If we look at Cronbach's alpha coefficient result, it shows that there is a high level of internal consistency based on its value of.876, which indicates A-Stability, thus supporting questionnaire distribution among sample individuals in this study. The findings were analyzed on SPSS Version 26, which provides full statistical solutions to social sciences phenomena.

* Results

The results of this study were as shown below (tables and figures). Sample data: A-In terms of gender:

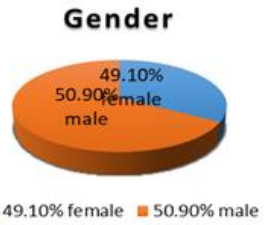

Fig 1-1: Demographic sample characteristics in terms of gender

* Another disease

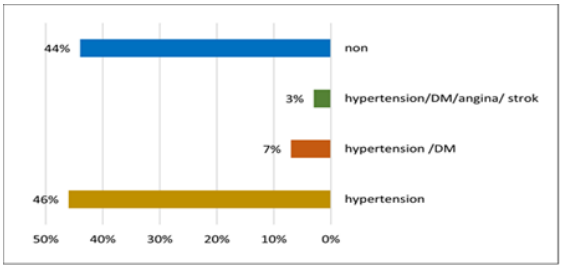

Fig 1-2: Demographic sample characteristics according to another disease

* In terms of weight

Table No. (1) Demographic sample characteristics in terms of weight

Column N %	Count		
24.5 %	26	From 12 kg up to 50 kg	**weight**
62.2 %	66	From 51 kg up to 90 kg	
13.2%	14	From 91 kg to 147 kg	
100%	110	Total	

Reliability of the study tool/Cronbach's Alpha Coefficient:

Table (2): shows the results of the Cron-Nbach alpha test

Number of phrases	Number of phrases	variable
0.876	15	**All questionnaire statements**

Reference: SPSS statistical package program.

One of the outcomes specified in Table 5 is that the Crew-Anbach alpha coefficient had a favorable and amounted to 0.876. Therefore, the author has established the reliability and validity of the questionnaires used in this research, thereby having ample confidence in their logical soundness.

The sample members were directed questionnaire questions:

Statistical significance of the mean and standard deviation of questionnaire questions:

Table (3): Statistical functions, the mean and standard deviation for the questionnaire questions

Descriptive Statistics			
N	Mean	Std. Deviation	
110	4.5070	.53112	Kidney failure can cause high blood pressure.
110	4.1408	.66108	There are genetic factors that make some people more likely to develop high blood pressure due to kidney failure.
110	4.2113	.67434	Daily behaviors can contribute to reducing blood pressure in patients with kidney failure.
110	4.8310	6.10383	Treatment of kidney failure affects patients' blood pressure levels.
110	4.3260	.97496	Patients' needs for antihypertensive medications change as kidney failure progresses.
110	4.0423	.72578	There are side effects of medications used to treat high blood pressure in patients with kidney failure.
110	3.9014	.98785	Kidney failure patients suffer from fluid retention in the body.

Reference: SPSS statistical package program.

From the table before, it is clear that the mean of most sample members' responses lay between agree and strongly agree (4.8310_4.1408), which were more than the mean approved by developers for arithmetic (3). This shows that there is a connection between kidney failure and blood pressure from the questions and answers provided by the subjects.

Study hypothesis: "There is a statistically significant relationship between kidney failure and blood pressure." In line with this, according to researchers' findings (17-20). It was important to test the Pearson correlation coefficient model in determining the strength as well as nature of the relationship existing amid kidney failure as an independent factor against blood pressure as its dependent variable

Table 4: Pearson correlation coefficient to test the hypothesis

Correlations		Blood pressure disease	Kidney failure disease
Blood pressure disease	**Pearson Correlation**	**1**	**.739****
	Sig. (2-tailed)		**.000**
	N	**110**	**110**
Kidney failure disease	**Pearson Correlation**	**.739****	**1**
	Sig. (2-tailed)	**.000**	
	N	**110**	**110**

Reference: SPSS statistical package program.

Statistical inference indicates significance at the 0.05 level. Statistical statistics indicate a link between renal failure and blood pressure disease. According to Table No. 4, the coefficient of correlation between the dependent variable "blood pressure disease" and the

independent variable "kidney failure disease" is significant at the 0.05% level of significance (the correlation coefficient was 0.739), indicating that the relationship between blood pressure diseases is directly proportional.

As a result, the hypothesis that there is a statistically significant link between renal failure and blood pressure disorders is valid.

Table No. 5 for Hypothesis One: Sample Statistics N Mean Std.

	N	Mean	Std .Deviation	Std. Error Mean
1	110	4.3421	0.1248	0.04123

Reference: SPSS statistical package program

Table No. (6) One: Sample Test

Test Value = 0						
	t	Df	Sig.(2tailed)	Mean Differencee	95% Confidence Intervalof the Difference	
					Lower	Upper
1	101.845	109	0.000	4.3421	4.0845	4.1956

Reference: SPSS statistical package program

The survey results in tables (5-6) revealed that the mean of respondents in the sample is not greater than 3 as assumed but rather the average was (4.3421) with a standard deviation of (0.1248). The value t was also equal to (101.845), while sig reached (0.000), which is the same thing as statistical significance since it is less than the normal level of a less significant P-value at 0.05; therefore, the null hypothesis is accepted, meaning that there's no statistically significant difference between kidney failure and high blood pressure, which could be considered consistent with what she observed before (17-20).

*** Recommendation**

Innovation is required to pinpoint the precise causes of high blood pressure (BP) and identify key areas for its management. The use of precision medicine is becoming increasingly popular, and non-invasive tests to assess muscle blood flow, sympathetic and vascular activity, and arterial contractility may help diagnose the different causes of HHD. Finally, when considering new therapeutic strategies, patient-reported outcome measures are of significant importance, including health-related quality of life, particularly since individuals with ESKD experience such a high symptom burden and functional impairment**.**

*** Conclusions**

From this study, it has been deduced that dialysis relates directly to high blood pressure. People suffering from renal diseases who undergo regular dialysis are more likely to develop hypertension than

those who do not have such an experience, according to this research. Other factors like poor nutrition and lack of physical activity may increase the chances of dialysis patients having high blood pressure, this study found. The results show that mild to moderate chronic kidney disease can cause high blood pressure in between 85% and 95% of cases. High blood pressure accelerates the progression of chronic kidney disease, which is also the second leading cause of end-stage renal disease requiring either dialysis or transplantation for survival. Renal hypertension occurs when narrowing arteries supplying kidneys alter one of their main purposes—regulating arterial tension, or BP. And when renal artery stenosis does happen, the kidneys respond to reduced perfusion as if dehydration were plaguing the body; consequently, renin gets secreted, leading to increased sodium levels within body fluids, thereby resulting in fluid retention and hence elevated BP levels within the entire system.

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