International Research Journal of Pharmacy and Medical Sciences
ISSN (Online): 2581-3277

Comparison between the Characteristics of Patients with Long-Term and Those with Short-Term Hemodialysis in Egypt: A Multicenter Retrospective Observational Study

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Abstract— Background*: Chronic kidney disease (CKD) patients on hemodialysis (HD) are associated with high rates of mortality. However, to the best of the authors' knowledge, there were no published studies concerning the long-term survival of HD patients in Egypt. Recognizing the features of long-term survivors on HD might help to plan for better HD service. The aim of the study is to identify the variables that are associated with long-term survival in Egyptian HD patients.* ***Material and Methods****: In this multicentre retrospective observational study, 73 patients who survived on HD for more than 20 years were identified from a total of 26000 patients in 25 Egyptian governorates surveyed during 2019(group 1; study group). Moreover, this study also included a comparison group (group 2) of 162 patients who passed away from June 2016 till June 2019 with an HD duration of fewer than 20 years, counted in seven HD centers (covering a total of 700 patients), that were the most accessible and cooperative ones. The demographic, clinical, dialysis, and laboratory data were retrospectively documented.* ***Results****: Male/female ratios were dissimilar in the studied groups, additionally, the distribution of possible etiology of CKD was different in the two groups. The study group had statistically significant younger age, younger age at starting HD, higher frequencies of HCV-Ab positive, and lower both systolic and diastolic blood pressures than the comparison group. Serum creatinine and albumin together with blood hemoglobin, which could be considered as a marker of better nutrition, were statistically significantly higher in long-term survival patients. Additionally, the absence of diabetes mellitus and a lower frequency of IHD were observed in the study group. The survival analysis and Kaplan-Meier curve confirmed that diabetic patients had statistically significantly lower survival estimates on HD than non-diabetics.* ***Conclusion****: Younger age and younger age at the start of HD, lower blood pressure, higher haemoglobin and serum albumin levels, adequate dialysis parameters and absence of DM were the main features of Egyptian HD patients with long-term survival.*

Keywords— *Egyptian; Hemodialysis Patients; Long Term Survivors; Short Term Survivors.*

I. INTRODUCTION

The dialysis population is associated with high rates of morbidity and mortality. End-stage renal disease (ESDR) is highly prevalent worldwide, around one million patients are undergoing renal replacement therapies, moreover, dialysis is still the most common modality) (1), (2). The dialysis patients also have a high prevalence of comorbidities, including atherosclerotic cardiovascular disease, congestive heart failure (CHF), hypertension (HTN), diabetes mellitus (DM), and cognitive impairment, which are risk factors for mortality) (1), (3). Age and overall comorbidities at the start of dialysis were strong predictors of survival (3). The 5-year survival for HD patients is 42%, while the general population survival rate (matched for age and sex) is 92-94 % (4). Overall, survival rates for patients on dialysis are poor, though improving worldwide (2).

Recognizing the characteristics of long-term survivors on HD might give awareness of determinants linked to long-term survival and help to plan for better HD services. Internationally, numerous studies have been piloted to explore the survival of patients on dialysis (5), (6), (7), (8), (9), (10), (11). In Egypt, to the best of our knowledge, there were scanty published researches, regarding long-term survival in hemodialysis patients. Consequently, it will be motivating to compare long-term and short-term survivors and to identify their variables in Egyptian HD patients.

II. AIM OF THE WORK

This study aimed to identify the variables that are associated with long-term survival in hemodialysis patients in Egypt.

III. SUBJECTS AND METHODS

In this multicenter retrospective observational study, 73 patients who survived on HD for more than 20 years were identified from a total of 26000 patients in 25 Egyptian governorates surveyed during 2019 (group 1; study group). Furthermore, this study also included a comparison group (group 2) of 162 patients who passed away from June 2016 till June 2019 with an HD duration of fewer than 20 years. The latter were identified in seven Egypt HD centers, serving a total of 700 patients, which were the most accessible and cooperative ones. The patients` demographic, clinical, dialysis, and average laboratory data were retrospectively retrieved. These data include the gender, age, dry body weight,

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height, body mass index (BMI), dialysis duration, age at starting hemodialysis, possible aetiologies of CKD, systolic and diastolic blood pressure, type of vascular access, co-morbid condition, and routine laboratory data. Group 1, representing the long-term dwellers on HD, had been described before as a part of a previous study (12). Patients of group 2 were also previously utilized in a study to identify the 3-year mortality in an Egyptian city (13).

Patients of group-2 were subdivided into three subgroups; group-2A comprised those who survived on HD for more than 9 years; group-2B, those who survived on HD from 2 to 9 years; and group-2C, those who survived less than 2 years. The term "long-term survival" was used in the current study to describe the patients who had survived on HD for more than 20 years.

IV. Statistical Analysis

After the collection of data, they were analyzed using the statistical package of social science (SPSS, IBM) software version 24. Categorical data were expressed as numbers and percentages and were analyzed by Chi-square. Scale data were expressed as means ± SD or medians (Q1-Q3) as appropriate. Normality was tested using Shapiro Wilkinson or Kolmogorov-Simiranov tests, as appropriate. Parametric data were analyzed using independent sample T-test and one-way ANOVA, while the Mann-Whitney test and Kruskal-Wallis test were used to analyze non-parametric data as appropriate. The survival analysis and Kaplan-Meier curve were utilized in the study.

V. Results

The patients of the two studied groups received hemodialysis sessions three-times-weekly, four hours each, based on bicarbonate dialysate. the dialysis sessions were routinely designed to utilize alternating high or low flux dialyzers (Dialyser size 1.4, 1.8 up to 2.2), with a dialysate flow rate of 500 ml/minute and blood flow rate of 300 ml/minute. the water treatment system followed the instructions of the Egyptian ministry of health that are compulsorily applied in the hemodialysis service all over Egypt (14).

The demographic data of the two groups of patients are shown in table 1. Group-1 included 73 ESRD patients on regular hemodialysis, with an age range between 31 and 75 years (mean age ~50 years), 68.5% of them were males. On the other hand, group 2 comprised 162 ESRD patients with a mean age of ~55 years (ranged from 25 to 90 years), of them 53.1% were males. A-V fistula was the used vascular access in most of the patients in both groups, while central venous catheters were used in 5.5% & 7.4% in group-1 and group-2 respectively (table1). Results of serological testing of hepatitis C and B, as well as HIV viruses, were also compared between the survival groups of the study. The 20-years or more survivors (group 1) showed statistically significant higher frequencies of HCV–Ab positivity than those of group 2 (Table1). On the other hand, the mean age and age at starting hemodialysis in group-1 were statistically significantly lower than those in Group-2. In addition, the mean age at starting hemodialysis seemed to be younger in the groups who lived longer compared to those who died earlier during their hemodialysis duration; the age of starting dialysis being older most in group 2C and younger most in group 1; statistically significant differences. BMI in patients who survived less than 20 years was statistically significantly higher than those with 20-years or more survivors, while, there was no statistical difference between subgroups of Group-2 (Table 1). HD-related factors in the studied groups showed that both pre-dialysis systolic and diastolic blood pressure were statistically significantly higher in patients who survived less than 20 years than those in Group-1, moreover, the difference between subgroups of Group-2 showed statistically significant difference. It was found that the longer the HD duration, the lower blood pressure measurement in the different groups. Furthermore, Group-1 had a statistically significantly higher urea reduction ratio (URR) when compared to those in Group-2 that indicated better adequacy of dialysis in long-term survival patients (Table 1).

The probable causes of CKD in both studied groups were different; HTN followed by urological causes were the first two commons in long-term survival patients while HTN was followed by unknown etiology in group 2. However, diabetes mellitus was the third common cause of ESRD in group-2 while those with long-term survival were non-diabetic. Additionally, simultaneous DM and HTN were detected only in group-2 and represented 10.5% of the possible etiology of CKD. On the other hand, Drug-related and pregnancy-related etiologies were more common in long-term survival patients than in the comparison group (Figure 1).

On comparing both groups of patients, the group of patients who lived on hemodialysis for more than 20 years (group 1) contained a higher male/female ratio (2.17) than did those who died before achieving such dialysis duration (1,13); a difference that is statistically significant (Table 1). Table 2 presented the frequencies of different comorbidities and some descriptive variables of both genders in group 1 and group 2; data were comparable between the two groups. The frequency of central venous catheters was more in the female gender, while it was not statistically significant.

The occurrences of certain comorbid conditions in the two groups were shown in Table 3. The frequency of diabetes mellitus was statistically significantly higher in patients who survived less than 20-years on dialysis; however long-term survival patients had no diabetes mellitus as an etiology of CKD or as an associated comorbid condition. Additionally, the frequency of IHD was statistically significantly higher in the comparison group than in the study group, while, there was no statistical difference in subgroups. The frequency of complications related to Skeletal disease was more common in groups 2-a, b than in group 1 while Group 2-c had no complications related to skeletal disease with no statistical significance differences. Moreover, the frequencies of hypertension were comparable in all groups.

Laboratory data of the studied groups were presented in Table 4. Blood hemoglobin (Hb) level, Platelet count, serum creatinine, and serum albumin levels were statistically significantly higher in long-term survival patients than those

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who survived less than 20 years. Moreover, the platelet count in the different groups was studied and showed a higher platelet count with a longer dialysis duration (figure 2). However, pre-dialysis session blood urea revealed the highest levels in those who survived for 9-20 years on HD (group-2A) followed by group-2B and group-2C respectively. Additionally, Post-dialysis session blood urea was statistically significantly lower in the study group than the comparison group; however, its level increased according to HD duration consequently in the three subgroups of group 2.

The survival analysis and Kaplan-Meier curve confirmed that diabetic patients had statistically significantly lower survival estimates on HD than non-diabetic patients (Table 5 and Figure 3).

VI. Discussion

The five-year survival of the general population has been identified as 92-94 % whereas the survival rate for HD patients matched for age and sex has been reported to be 42%, (4). In general, survival rates for patients on dialysis are increasing worldwide, but they are still poor, despite advances in technology, diagnosis, and treatment (2). This study compared the 20-year or more survivors on HD with those who passed away in less than twenty years on HD. Major findings of the current study were the presence of younger age, younger age at the start of dialysis, lower blood pressure, absence of diabetes, better adequacy of dialysis, lower BMI, and higher blood hemoglobin and serum albumin levels in long-term survival patients. Our results support previous data published by Teixeira et al (2015) denoting that advanced age at the onset of dialysis, hypoalbuminemia, and anemia were strong predictors of mortality. (15).

In the current study, the male-to-female ratio was much higher in long-term survival HD patients, compared to shorter-term survivors, who could be related to the preponderance of males in those who started HD 20-30 years ago in Egypt; a concept that can be inferred from the Egyptian National Kidney Foundation Reports of years 1998 & 1999. The latter showed a male to female ratio in HD patients of around two (16); (17). Similarly, the ratio was 1, 6 in another multicentre study of 26000 Egyptian HD patients in 2016 (18). Whether this reflect a higher incidence of ESRD in males compared to females at that time or the possibility that some communities might favour serving male gender and giving males higher priority in the medical care. It is expected that males are more prone to risk factors of renal disease as they were more exposed to work pressures and as they may be more socially and financially privileged in some developing countries, they are capable of seeking medical advice more often than females.

There were higher frequencies of HCV–Abs positive in those who survived more than 20 years in this study; a finding that may be hypothesized to be related a longer duration of HD and thus, more chance for exposure to catching the infection. The latter observation receives support by many various studies that found higher frequencies of positive HCV antibodies with the increase in hemodialysis duration (19), (20).

In this work, there was younger age at the start of dialysis, lower diastolic and systolic blood pressure in long-term survival patients on HD. This is supported by many international reports which also denoted that younger age at the start of HD and normal blood pressure are among the factors that are associated with long survival on HD (21), (22).

In the present study, there was a predominance of functioning A-V fistulae as the first vascular access in the whole group, which is in harmony with an Egyptian nationwide study structured by El Sharkawy and his co-workers (23). However, the central venous dialysis catheters were more prevalent in the shorter-term survivor group in the present study. The A-V fistula is considered the optimal access for HD because of its lower occurrence of impediments, higher access endurance, and its association with decreased mortality when compared with central venous dialysis catheters (24).

On the other hand, the finding of a lower BMI, in the existing work, in long-term survival patients; is dissimilar to numerous previous studies supporting the obesity paradox; a higher body mass index (BMI) is paradoxically associated with better survival in hemodialysis patients. (25), (26). Our data could be explained by the presence of low frequency of obesity in our long-term survival patients and the lack of existence of diabetes, which might favor higher BMI, in this group. Our findings were reinforced by Schmidt and Salahudeen who reviewed the available data analysis and reported that this phenomenon, the obesity-survival paradox, is neither universally accepted nor completely understood (27). Furthermore, Beddhu and his associates described that the protective effect deliberated by high BMI is limited to those patients with normal or high muscle mass, while high BMI patients with high body fat have increased rather than decreased mortality (28). Additionally, this group showed decreased frequency of evident coronary artery disease. This is in agreement with many international reports that reported lower frequencies of some associated comorbidities e.g. DM and IHD with long survival on HD (21), (22). In the same context, many researchers reported that diabetes is the most common risk factor for end-stage renal disease (ESRD) and has been associated with increased mortality on dialysis. Also, they revealed that in patients with ESRD there was no survival difference between patients with diabetes as a primary renal disease and patients with diabetes as a co-morbid condition, while there was better survival of non-diabetic patients (29), (30). However, Wison and his colleagues reported that patients with IHD had very high mortality in hemodialysis compared to those with normal renal function (31). Additionally, Chandrashekar and his associates revealed that ischemic heart disease frequently affects survival amongst hemodialysis patients (32).

Better nutrition could improve survival among hemodialysis patients. In this work, there was higher blood hemoglobin (Hb) levels, serum creatinine, serum albumin levels, and better adequacy of dialysis in long-term survival patients that provided an impression about better nutrition and better dialysis quality. This is supported by some international reports demonstrating better patient survival with higher

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dialysis dose, increased frequency of dialysis and higher hemoglobin level, higher serum albumin level, and improving nutrition (33), (32).

In pre-dialysis, as well as in hemodialysis patients, platelet number tends to be reduced to 175–180,000/mm3 compared with 250,000/mm3 in healthy controls (34) ,(35). In this work, it was found that the longer the dialysis duration, the higher the platelet count; denoting that the lower platelet count could be associated with higher mortality. This is in agreement with Zhao and his colleagues (2022) who concluded that in Chinese HD patients, thrombocytopenia was associated with a higher risk of all-cause, but not cardiovascular, mortality (36). Platelet counts might thus be a useful prognostic marker for clinical outcomes among HD patients (36).

VII. Conclusion

A Younger age and younger age at the start of HD, lower blood pressure, better adequacy of dialysis, higher haemoglobin and serum albumin levels, and absence of DM are distinctive variables of long-term survival in Egyptian HD patients. Early identification of different risk variables in HD patients can pave the way for modifications of the care of patients and enhance their survival on HD.

Acknowledgement

Authors are grateful to Drs. Sherif Anis, Ahmed El-Mokadem, Essam Fathy, Mohamed El-Anwar, Eman ElZawhary, Ahmed ElBialy, Gehan Mekhail, Hany Helmy, Aamer Abd-Elatif, Soher Sabry, Dina Edward, Dina Salah, Amira El-Beltagy, Hany Helmy, Rowaida Hossny, Amr Abd-Elall, Nahla Yassen, Ahmed Hamza, Shimaa Elsharkawy, Rabab Taha, Reem Farouk.

Mrs. Afaf Fahmy, Mahassen Mohamed, Sara Selim, Fatma Abd-Elgelel.

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TABLES AND FIGURES

TABLE 1: Comparison of Demographic & HD data in the studied groups

		Total Groups			**Sub-groups of Group-2**			
		Group-1	**Group-2**	**P1**	Group-2A	Group-2B	• Group-2C	**P2**
Gender	**Female n (%) *N=99**	23 (31.5%)	76 (46.9%)	0.027	17 (51.5%)	43 (44.8%)	16 (48.5%)	**0.753**
	Male n (%) N=136	50 (68.5%)	86 (53.1%)		16 (48.5%)	53 (55.2%)	17 (51.5%)	
Male/Female Ratio		2.17	1.13		0.94	1.23	1.06	
Age (yrs)	*N	73	162	0.01	33	96	33	**0.918**
	Mean ± SD	50.3±9.6	54.64		53.8±11.9	54.8±13.3	54.9±11.9	
Weight (kg)	*N	72	149	< 0.001	32	91	26	**0.811**
	Mean ± SD	59.81±12.81	71.42		71.91±17.41	71.78±15.60	69.6±14.8	
Height (cm)	*N	72	66	0.774	20	35	11	**0.766**
	Median (Q1-Q3)	150 (152.5-168.75)	159.5 (155-165.25)		158.60±7.82	160.20±7.32	158.91±8.89	
BMI	*N	72	62	< 0.001	19	33	10	**0.731**
	Median (Q1-Q3)	22.5 (20.21-25.59)	26.97 (23.64-32.42)		29.01±7.49	27.71±4.89	25.99±5.39	
Age at starting HD (yrs)	*N	72		< 0.001	33	96	33	**0.001**
	Mean ± SD	27.40 ±9.81	50.14±13.49		42.56 ±13.04*#	51.32 ±13.26#	54.32 ±11.94*	
Vascular Access n=235	A-V Fistula *N %	69 (94.5%)	150 (92.6%)	0.335	32 (97%)	86 (89.6)	32 (97%)	**0.211**
	catheter n, %	4 (5.5%)	12 (7.4%)		1 (3%)	10 (10.4%)	1 (3%)	
Serology	Virology negative n, % *N=131	14 (19.4%)	117 (72.2%)	< 0.001	21 (63.6%)	71 (74.0%)	25 (75.8%)	**0.753**
	HCV positive n, % *N=94	55 (76.6%)	39 (24.1)		11 (33.3%)	21 (21.9%)	7 (21.2%)	
	HBV positive n, %* N=5	3 (4.2%)	2 (1.2%)		0 (0.0%)	2 (2.1%)	0 (0.0%)	
	HBV & HCV positive n, % *N=4	0 (0.0%)	4 (2.5%)		1 (3%)	2 (2.1%)	1 (3.0%)	
Dialysis Duration (Months)	*N	73	162	< 0.001	33	96	33	< **001**
	Median (Q1-Q3)	264 (253-292)	38 (3-162)		120 (103.5-162) *#	38 (19.3-63.3) #$	6 (3-11.5) *$	
Systolic Blood pressure (mm hg)	*N	69	136	< 0.001	31	79	26	**0.028**
	Median (Q1-Q3)	120 (110-13 0)	135 (120-145)		120 (110-140) *	135 (120-150)	135 (130-150) *	
	Min-Max	90-160 (77.6)	85-200 (115.88)		110-190	85-200	90-155	
Diastolic Blood Pressure (mm hg)	*N	69	136	0.020	31	79	26	**0.02**
	Median (Q1-Q3)	80 (70-90)	80 (75-90)		80 (70-80) *#	85 (75-90) #	85 (80-90) *	
	Min-Max	50-100 (89.78)	55-120 (109.7)		70-100	55-120	65-100	
Urea Reduction Ratio	*N	35	122	< 0.001	29	71	29	**0.963**
	Median (Q1-Q3)	0.65 (0.58-0.73)	0.58 (0.53-0.66)		0.57 (0.53-0.66)	0.57 (0.53-0.68)	0.59 (0.52-0.63)	

P1 shows the difference between Group 1 & Group 2.
P2 shows the difference between Group 2 sub-groups.
* Significant difference between Group 2A & Group 2C.
# Significant difference between Group 2A & Group 2B.
$ Significant difference between Group 2B & Group 2C
N* number of available data

Weight was calculated based on dry body weight and SBP&DBP were calculated based on the mod measurements.

International Research Journal of Pharmacy and Medical Sciences
ISSN (Online): 2581-3277

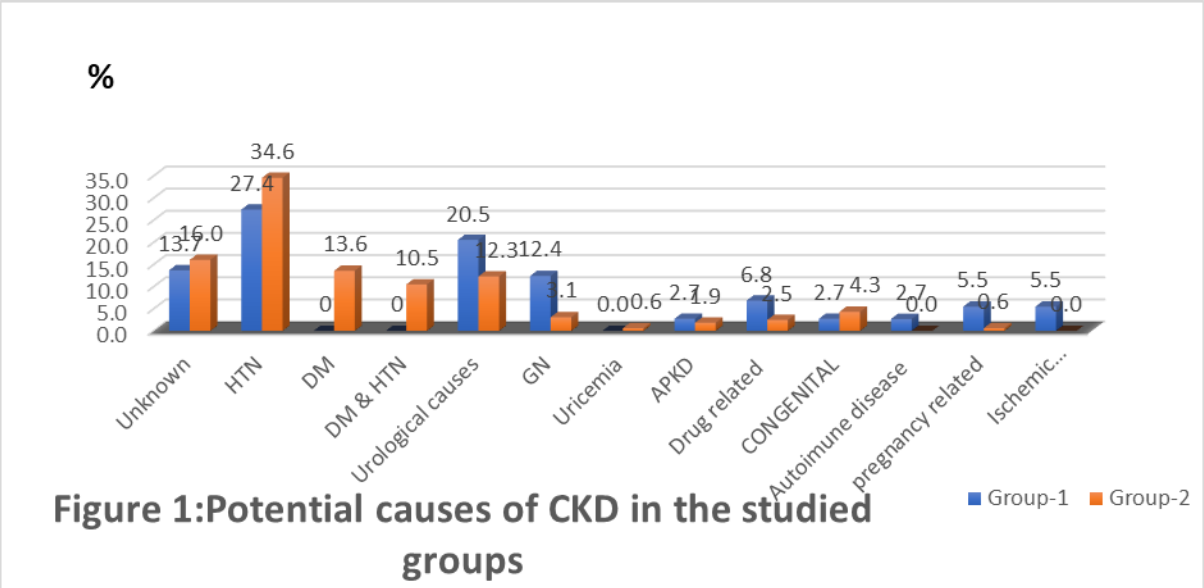

Figure 1:Potential causes of CKD in the studied groups

TABLE 2: Comparisons between both genders in group 1 and group 2

			Gender				p
			Females		Male		
			*N	%	N	%	
Group-1 (> 20yrs)	Vascular Access	AV Fistula	20	87.0%	48	96.0%	0.317
		Catheters	3	13.0%	2	4.0%	
Group-2 (< 20yrs)	Vascular Access	AV Fistula	66	86.8%	79	91.9%	0.298
		Catheters	10	13.2%	7	8.1%	
Group-1 (> 20yrs)	Complications related to Skeletal disease	Yes	10/23	43.5%	22/45	48.9%	0.672
Group-2 (< 20yrs)		Yes	12/19	63.2%	14/24	58.3%	0.748
Group-1 (> 20yrs)	DM	yes	0	0%	0	0%	
Group-2 (< 20yrs)	DM	Yes	25/76	32.9%	30/86	34.9%	0.790
Group-1 (> 20yrs)	HTN	Yes	15/23	65.2%	25/50	50.0%	0.225
Group-2 (< 20yrs)	HTN	Yes	35/76	46.1%	35/86	40.7%	0.492
Group-1 (> 20yrs)	IHD	Yes	5/23	21.7%	9/50	18.0%	0.706
Group-2 (< 20yrs)	IHD	Yes	29/76	38.2%	27/86	31.4%	0.366

			*N	Mean	Std. Deviation	P
Group-1 (> 20yrs	Hb	Females	23	10.58	1.83	0.599
		Male	47	10.31	2.07	
	Age at start of HD	Females	23	25.98	10.39	0.404
		Male	49	28.07	9.57	
	Age	Females	23	48.48	9.67	0.279
		Male	50	51.12	9.59	
Group-2 (< 20yrs)	Hb	Females	64	9.13	1.64	0.975
		Male	73	9.12	1.67	
	Age at start of HD	Females	76	51.15	14.21	0.373
		Male	86	49.25	12.84	
	Age	Females	76	55.51	13.86	0.411
		Male	86	53.86	11.63	

TABLE 3: The frequencies of different comorbidities in the studied groups

		Total Groups		p	Sub-groups of Group-2			P
		Live > 20 Yrs on HD	***Live < 20 Yrs on HD***		***Group-2A***	Group-2B	***Group-2C***	
DM	Yes	0 /73(0.0%)	55 /162(34.0%)	**< 0.001**	14 /33(42.4%)	30 /96(31.3%)	11/33 (33.3%)	**0.503**
HTN	Yes	40/73 (54.8%)	70 /162(43.2%)	**0.100**	14/33 (42.4%)	40 /96(41.7%)	16/33 (48.5%)	**0.788**
Ischemic heart disease (IHD)	Yes	14/73 (19.2%)	56/162 (34.6%)	**0.017**	12/33 (36.4%)	33/96 (34.3%)	11/33 (33.3%)	**0.965**
Complications related to Skeletal disease	Yes	32/68 (47.1%)	26 /43(60.7%)	**0.168**	10/14 (71.4%)	16 *27(59.3%)	0 /2(0.0%)	**0.151**

Abir Farouk Megahed, Ghada El-Said, Sara M Abdel-Gawad, and Nagy Sayed-Ahmed, "Comparison between the characteristics of patients with Long-term and those with short-term hemodialysis in Egypt: A multicenter retrospective observational study" *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, Volume 5, Issue 3, pp. 1-8, 2022.

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TABLE 4: Laboratory results of studied groups

		Total Groups			Sub-groups of Group-2			
		Group-1	Group-2	p	Group-2A	Group-2B	Group-2C	p
Hb	*N	70	137	<	27	78	32	**0.002**
	Mean ±SD	10.40 ± 1.98	9.12 ± 1.65	**0.001**	9.78 ± 1.65*	9.14 ± 1.67$	8.28 ±1.24*$	
Platelet	*N	8	134	<	23	82	29	<
	Mean ±SD	215.50 ± 105.29	128.91 ± 44.69	**0.001**	151.24 ±38.34*	131.12 ±39.56$	92.90±49.12*$	**0.001**
S. creatinine	*N	57	121	**0.006**	19	76	26	**0.121**
	Mean ±SD	8.03 ± 2.65	6.98 ± 2.19		6.38 ± 2.12	7.30 ± 2.22	6.56 ± 2.06	
Pre-Dialysis session Blood Urea	*N	66	134	**0.174**	23	82	29	<
	Mean ±SD	120.580 ±30.71	128.92 ± 44.69		`151.241±38.34*	131.122± 39.56$	92.90±49.12*$	**0.001**
Post-Dialysis session Blood Urea	*N	35	114	**0.001**	27	69	18	**0.002**
	Mean ±SD	40.68±12,71	54.81±25.02		66.23±21.73	54.69±23.85	38.15±21.73	
Serum potassium	*N	14	18	**0.743**	5	10	3	**0.523**
	Mean ±SD	5.19 ± 1.43	5.32 ± 0.83		4.90 ±1.11	5.51 ±0.78	5.20 ±0.82	
Serum Albumin	*N	14	19	<	11	0	8	**0.184**
	Mean ±SD	3.74±0.59	2.95±0.44	**0.001**	3.1 ±0.4		2.8±0.4	
Serum Calcium	*N	28	62	**0.941**	25	26	11	**0.066**
	Mean ±SD	8.48±1.92	8.45±1.15		8.4 ±1.3	8.8±0.8	7.8±1.4	
Serum phosphorus	*N	24	76	**0.642**	11	42	23	**0.165**
	Mean ±SD	5.00±1.80	4.81 ± 1.56		4.39 ± 1.74	5.12 ± 1.54	4.55 ±1.02	
PTH	*N	11	40	**0.705**	14	25	1	**0.678**
	Mean ±SD	288 (200-90) 656.82±782.53	381 (131-615.5) 535.24±588.87		473.7 (131-1251.3)	374 (11.5-578)	316	

P1 shows the difference between Group 1 & Group 2.
P2 shows the difference between Group 2 sub-groups.
*Significant difference between Group 2A & Group 2C.
Significant difference between Group 2A & Group 2B.
$ Significant difference between Group 2B & Group 2C

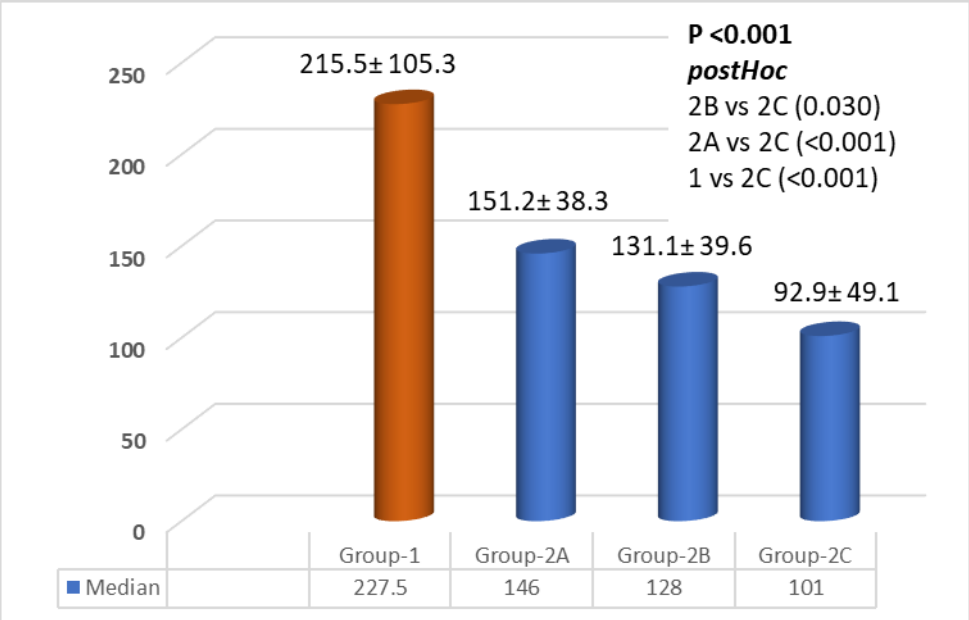

Figure 2. Comparison of platelet count in the studied groups

TABLE 5: The survival analysis of dialysis duration with presence or absence of diabetes mellitus

	Mean				Median				p
	Estimate	Std. Error	95% CI		Estimate	Std. Error	95% CI		
			Lower Bound	Upper Bound			Lower Bound	Upper Bound	
Non-Diabetic	177.57	11.86	154.33	200.81	97.00	13.77	70.01	123.99	<0.001
Diabetic	61.62	7.67	46.59	76.65	43.00	3.71	35.73	50.27	
Overall	150.38	9.79	131.19	169.58	80.00	10.73	58.97	101.03	

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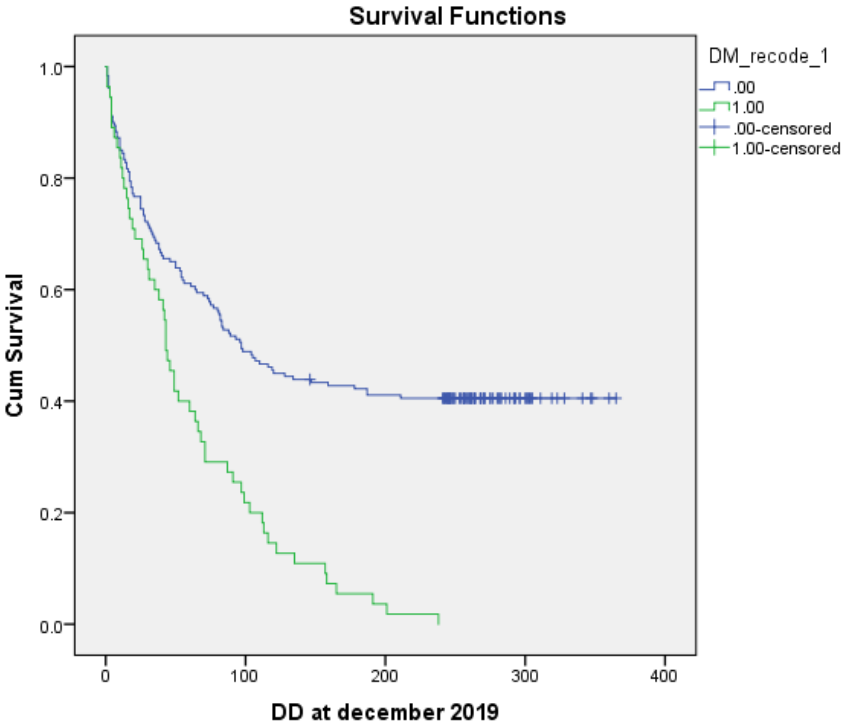

Figure 3. Kaplan-Meier curve between dialysis duration and diabetes mellitus

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