ASSESSMENT OF FACTORS AFFECTING THE HEALTH-RELATED QUALITY OF LIFE IN PATIENTS ON MAINTENANCE HEMODIALYSIS

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ABSTRACT

Background

Quality of life is an important parameter that needs to be considered when evaluating the outcome of patients receiving healthcare; this is especially the case for patients with long-term chronic diseases. Furthermore, with the increasing medical ability to prolong life, the patient's quality of life has become an increasingly legitimate medical outcome. Therefore, assessment of patients' quality of life not only helps assess the quality of the dialysis but also is useful to guide nephrologists to develop better interventions and plans of care for the future.

Objectives

To assess the quality of life and factors affecting hemodialysis patients.

Patients and Methods

An observational, cross-sectional study was conducted among (209) patients on maintenance hemodialysis at six major hemodialysis centres in Sulaimani Governorate. They are using a questionnaire face-to-face interview for ten months, from 7/Sep./2021 to 10/Jun/2022. Data analysis by the IBM SPSS program, quantitative variables are expressed as mean ± standard deviation (M±SD), median and interquartile, and results from qualitative variables are expressed as percentages. P-value < 0.05 assume the significance for results.

Results

Overall mean quality of life was near (37%) in (100%) of normal persons, with an SD (of 13.26). Over one-third were in the age group of (50-64) years, and the number increased by age. Nearly equal male-to-female ratio (50.2male, while 49.8 female). (46.4%) were illiterates, and (67%) were Unemployed. Claimed that they had no income (65.6 %) and diabetes mellitus among patients (45.9%). Demographic factors, dialysis adequacy, and clinical factors are among the factors that affect the quality of life.

Conclusion

Despite regular hemodialysis, the patient's quality of life on maintenance hemodialysis is severely affected. Both clinical and nonclinical factors, such as demographic factors, Dialysis adequacy, comorbidities, and others, were severely affecting the quality of life of patients on maintenance hemodialysis, especially physical activities.

Keywords: *Quality of life (QOL), hemodialysis (HD), End-Stage Renal Disease (ESRD), Health-Related QOL (HRQOL).*

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INTRODUCTION

Chronic kidney disease (CKD) is a critical cause of morbidity and mortality worldwide. Individual, social, and economic results of CKD are enormous. Patients with CKD on Maintenance hemodialysis (MHD) have to bear significant physical, psychological, and economic challenges [1]. CKD is the 12th leading cause of death and the 17th cause of disability. The global increase in diabetes Mellitus, hypertension, obesity and ageing is driving the global increase in CKD [2] .Revealed an annual incident growth rate of 8% for end-stage renal disease (ESRD) [3].

Once a patient has been diagnosed with ESRD, they are placed on dialysis. There are two modalities of dialysis, hemodialysis (HD) and peritoneal dialysis (PD). HD is a treatment for kidney failure in which a dialysis machine performs work on the kidneys. The removal of toxins from the bloodstream that accumulate from daily life activity and the removal of excess fluid from the body. Treatments are often done three times per week. Dialysis keeps patients alive but not well. HD is a time-consuming and costly treatment. It needs more restrictions on diet and fluid and causes a loss of freedom, dependence on caregivers, disturbance of marriage, family, and social life, and reduction or lack of income. All these factors impair QOL [4].

Quality of life (QOL) is an important parameter that must be considered when evaluating the outcome of patients receiving health services; this is especially true for patients with long-term chronic diseases [5].With the increasing medical ability to prolong life, the patient's quality of life has become an increasingly legitimate medical outcome. Assessment of QOL of patients not only helps to assess the quality of the dialysis program but also is useful to guide nephrologists to develop better interventions and plans of care for the future [6]. In in1996, WHO defined quality of life as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards, and concerns". This definition reflects the view that quality of life is a subjective evaluation embedded in a cultural, social, and environmental context [7].

Health-related quality of life (HRQOL) refers to the impact of a specific illness, injury, or medical treatment on the patient. In recent years, HRQOL in ESRD patients has become a focus of interest in evaluating various modalities of renal replacement therapy (RRT) [8].

In addition to mortality and morbidity. HR-QOL in hemodialysis patients is dramatically lower than in the general population and is associated with a higher risk of death and hospitalization; factors such as demographic, comorbidities, and dialysis issues play a major role [9] .

The objectives of this study is to describe the QOL in patients on MHD and determine factors affecting the quality of life. We also explain how those factors may affect the QOL in these patients, such as the impact of demography, dialysis adequacy, and comorbidities. To Identify the physical, psychological, social, environmental, and religious influences and their impacts on the QOL. To identify quality of life and factors that affect the quality of life in persons on maintenance hemodialysis.

PATIENTS AND METHODS

Design

A cross-sectional study has been carried out, among patients with CKD undergoing MHD at six major HD centers in Suleimani Governorate. A total of (209) patients were evaluated, Qrga HD center n= 81 patients, Shar Hospital n= 44 patients, Rania HD center n= 39 patients, Saidsadq HD center n=21 patients, Halabja HD center n= 14 patients, Kalar HDC=10 patients.

Ethical approval for the study was obtained from both the Suleimani University ethical committee, the scientific committee of the college of medicine and the Suleimani General Health directorate for the HD centers.

Sampling

The researcher recruited all hemodialysis patients at the dialysis centers during visits to Sulaimani governorate. of age 18 years and older, with a confirmed diagnosis of ESRD, and on regular HD therapy for at least 3 months. We excluded patients who had major psychiatric disorders and were physically or mentally unable to communicate with the researchers.

Instrument

A questionnaire was used for data collection and consisted of two parts: part one; was developed by the researcher. part two was a standard tool, which has been used internationally for data collection to measure the variables underlying the present study, mainly to assess the quality of life in Data analysis by IBM SPSS program special for analyses, Results from quantitative variables are expressed as mean ± standard

deviation, for non-normal distributed data median and interquartile, and results from qualitative variables are expressed as percentages. p-value < 0.05 assume the significant for results.

RESULTS

The mean age was (54.3±15.2) years, 67% of participants were over the age of 50 years old. An approximately equal ratio of males to females (50.2male, while 49.8 female), 46.4% were illiterates, and only (6.2%) completed diplomas or bachelor's degree. Regarding marital status (65.6%) were married, (21.1%) were divorced or widowed. (67%) were unemployed. (20.6%) were retired and (2.4%) were self-employed. (49.3%) have been living in the city center, versus (50.7%) outside the city center. About (33%) had independent income, (19.1%) received support from other source such as (charity). (65.6%) of patients Claimed that they had no income, while (1.9%) received a monthly income of more than (1000,000) Iraqi dinar (ID), and (19.1%) had an income between (250.000-500,000) ID, (5.7%) had (0-250,000) ID, and other (7.7%) (500,000-1000,000) ID, Table (1).

Table (2) shows that younger patients had better QOL than older ones, so by increasing the age, the QOL decreased in all domains. Age significantly changed the quality of life in patients in all four domains (p-value < 0.05). Male had better QOL, and significant changes in physical, and social domains. Regarding marital status, single patients had better QOL than both married and widowed or divorced, then married once had better QOL than widowed or divorced patients. The level of education, significantly affects QOL, QOL Increased by increasing the level of education, those with diplomas degree, or above had a better QOL than illiterate ones. The area of living had no significant effect on QOL in all four domains.

Dialysis adequacy showed in the Table (3). The number of dialysis sessions per week did not affect the QOL and had no significant changes (p-value > 0.05). However, the QOL were lower in both physical, and social aspects than in psychological and environmental domains. Regarding the type of access, it significantly affected QOL, those who had HD catheter had better QOL than those with fistula access, and those with fistula had better QOL than graft ones. The duration of dialysis significantly affected QOL in both psychologic and environmental domains (p-value < 0.05). Those who have had one year or less and those who had more than five years on dialysis had better QOL.

The calculations of QOL showed three standard scores. The highest mean score among studied QOLs was related to (psychological health) which means there were better psychologically, with an average of about (43% ± 13). The lowest was related to domain 1 (physical health) which means they had lower physical activities, by a mean of about (33% ± 14). The environment state was the second-highest score overall on average about (49% ± 10). The social status among patients was also the second lowest domain; however, the Table (4) illustrates that all domains were below the standard value.

Economic status and monthly income significantly affect all four domains of QOL p-value <0.05 except in psychologic status in monthly income as showed in Table (5). With increasing income increase the level of QOL. The highest QOL was among monthly income between (500.000-1000.000) ID was (47.3) in environmental domain. Those whom had himself or herself income higher QOL with highly significantly affected p-value < 0.05 mean was (44.1) in psychologic status. And the lowest QOL appear among those whom had (0-250.000) ID monthly, and those whom had supported by other or (charity) high significantly affected was (24.7).

Table 1. Demographic and Characteris of Patients on Maintenance Hemodialysis (N=209)

Sociodemographic characteristics	Frequency	(%)
Age (Years)		
Mean ± SD	54.3 ± 15.2	
18 - 34	24	11.5
35 - 49	45	21.5
50 - 64	76	36.4
65 and more	64	30.6
Gender		
Male	104	49.8
Female	105	50.2
level of education		
Illiterate	97	46.4
Primary	55	26.3
Secondary	44	21.1
Diploma and Bachelor	13	6.2
Marital status		
Single	28	13.4
Married	137	65.6
Widow	38	18.2
Divorce	6	2.9
Occupation		
Employed	21	10.0
Unemployed	140	67.0
Independent work	5	2.4
Retired	43	20.6
Residency		
Inside city	103	49.3
Outside city	106	50.7
Income source		
himself/herself	69	33.0
Family	100	47.8
Others	40	19.1
Family size (individuals)		
One - two	35	16.7
Three-four	79	37.8
Five - six	58	27.8
More than six	37	17.7
Monthly income		
None	137	65.6
0 - 250,000 ID	12	5.7
250,000 - 500,000 ID	40	19.1
500,000 - 1,000,000 ID	16	7.7
> 1,000,000 ID	4	1.9
Total	**209**	**100%**

Table 2. Comptonization QOL to demography among patients.

Socio-demographic		Mean score ± Standard deviation			
		Physical	Psychological	Social	Environmental
Age (Years)	18 - 34	45.3 ± 14.7	53.3 ± 16.6	44.3 ± 20.0	49.5 ± 12.6
	35 - 49	39.8 ± 13.8	49.4 ± 13.3	38.8 ± 13.7	42.0 ± 10.5
	50 - 64	30.8 ± 12.8	41.5 ± 12.0	30.8 ± 12.3	39.1 ± 9.5
	65 and more	25.6 ± 10.2	38.0 ± 10.6	27.5 ± 12.2	35.0 ± 8.4
	P- value	< 0.001	< 0.001	< 0.001	< 0.001
Sex	Male	34.9 ± 13.6	44.6 ± 13.3	35.6 ± 15.6	40.9 ± 10.8
	Female	30.8 ± 14.4	42.3 ± 13.7	30.6 ± 13.4	38.4 ± 10.5
	P-value	0.04	0.22	0.01	0.09
Marital status	Single	45.1 ± 14.7	51.0 ± 18.3	43.1 ± 20.8	46.7 ± 12.0
	Married	31.4 ± 13.1	42.9 ± 12.3	32.8 ± 13.2	39.1 ± 9.5
	Divorce or widow	29.4 ± 13.1	40.5 ± 12.3	27.6 ± 11.3	37.0 ± 11.6
	P- value	< 0.001	0.003	< 0.001	< 0.001
Level of education	Illiterate	27.5 ± 12.1	39.2 ± 13.5	28.2 ± 12.9	37.2 ± 9.5
	Primary	36.5 ± 13.8	45.8 ± 11.6	35.6 ± 12.2	39.8 ± 9.3
	Secondary	36.6 ± 14.9	47.5 ± 13.5	37.1 ± 17.9	41.7 ± 12.5
	Diploma or Bachelor	44.4 ± 12.7	51.5± 112.7	44.8 ± 13.2	50.1 ± 10.9
	P- value	< 0.001	< 0.001	< 0.001	< 0.001
Residency	Inside city	33.5 ± 14.5	43.5 ± 13.4	32.8 ± 15.0	39.7 ± 10.8
	Outside city	32.2 ± 13.8	43.4 ± 13.7	33.3 ± 14.5	39.6 ± 10.6
	P-value	0.48	0.96	0.80	0.95

Table3. Compare dialysis adequacy to QOL among participants.

Duration and type of dialysis		Mean score ± Standard deviation			
		Physical	Psychological	Social	Environmental
Number of dialyses per week	Once or twice	32.8 ± 14.9	44.9 ± 13.6	32.8 ± 14.0	40.6 ± 10.8
	Three times or more	32.9 ± 12.9	41.3 ± 13.2	33.5 ± 15.8	38.3 ± 10.5
	P-Value	0.94	0.06	0.72	0.14
Type of access	Fistula	31.2 ± 13.8	42.0 ± 13.0	30.7 ± 13.4	38.5 ± 10.2
	Shunt	37.9 ± 14.2	47.4 ± 14.6	40.1 ± 16.3	43.1 ± 11.5
	Graft	26.8 ± 13.7	44.0 ± 4.9	28.3 ± 11.9	37.5 ± 9.0
	P Value	0.008	0.04	< 0.001	0.02
Duration of dialysis	1 year or less	35.9 ± 14.6	46.5 ± 13.1	36.3 ± 13.8	42.2 ± 11.0
	2 - 3 years	30.8 ± 13.6	40.7 ± 14.0	31.1 ± 15.5	39.1 ± 10.5
	4 - 5 years	30.1 ± 11.2	41.4 ± 10.3	29.1 ± 11.6	33.9 ± 9.0
	More than 5 years	32.3 ± 16.8	44.5 ± 15.8	33.3 ± 18.0	40.3 ± 9.2
	P-Value	0.09	0.04	0.054	0.003

Table 4. The quality-of-life score according to who QOL brief standard for score.

QOF Domain	Mean	Standard Deviation
Domain 1 (physical health)		
Total recorded score	16.230	3.916
Transformed score (0 - 20)	9.230	2.265
Transformed score (0 - 100)	32.842	14.128
Domain 2 (psychological health)		
Total recorded score	16.40	3.17
Transformed score (0 - 20)	10.89	2.20
Transformed score (0 - 100)	43.46	13.52
Domain 3 (Social relationship)		
Total recorded score	6.95	1.78
Transformed score (0 - 20)	9.29	2.36
Transformed score (0 - 100)	33.06	14.73
Domain 4 (Environment)		
Total recorded score	20.13	3.38
Transformed score (0 - 20)	10.33	1.71
Transformed score (0 - 100)	39.66	10.68
OVERALL	37.255	13.26

Table 5. The effects of economic status on QOL among participan

Economic status		Mean score ± Standard deviation			
		Physical	Psychological	Social	Environmental
Monthly income (ID)	**None**	31.5 ± 13.9	42.7 ± 13.7	32.0 ± 15.3	38.6 ± 10.7
	0 - 250,000	29.9 ± 11.9	39.3 ± 12.0	31.2 ± 8.4	39.1 ± 9.0
	250,000 - 500,000	34.2 ± 13.3	45.1 ± 12.9	32.2 ± 12.7	39.5 ± 8.2
	500,000 - 1,000,000	42.6 ± 14.5	47.8 ± 13.7	44.9 ± 13.6	47.3 ± 10.7
	> 1,000,000	36.0 ± 22.5	47.0 ± 15.9	36.0 ± 171	47.0 ± 22.9
	P Value	0.04	0.4	0.02	0.02
income source	**Himself / herself**	34.5 ± 15.1	44.1 ± 14.6	34.3 ± 14.3	41.0 ± 10.9
	Family	34.2 ± 14.1	46.5 ± 12.3	35.5 ± 15.5	41.9 ± 10.1
	Others	26.6 ± 10.6	34.9 ± 10.9	24.7 ± 9.9	31.7 ± 8.0
	P Value	0.007	< 0.001	< 0.001	< 0.001

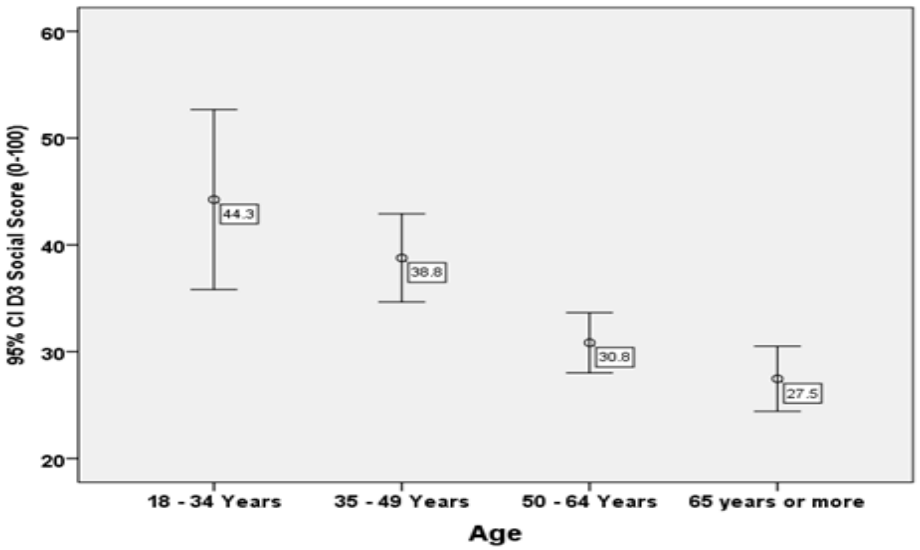

Figure 1. Social score according to age among our participant.

DISCUSSION

The quality of life of the patients on hemodialysis is dramatically lower than half (less than 50%) which is nearly (37%) than in the general population which is (100%), and was strongly associated with a higher risk of death and hospitalisation. For a total duration of ten months (from September 2021 to June 2022) [46]. patients died according to data from these six centers.

This study demonstrated that the HRQOL of patients with chronic HD is severely impaired, the results are similar and supported by all previously published studies. (10–14) The highest mean score among studied QOL was related to psychological health. The socio-cultural, religious, family relationship, and beliefs in our society play a major role in increasing this domain. The lowest mean was related to physical activities, all patients severely affected, which was supported by many previous studies. The complication and comorbidity associated with ESRD and HD procedures caused decrease QOL. The data was the same as the result of study in Pakistan and Iran in 2011 Whom showed that their patients had lower QOL in physical activities [15].

The environment status had the second-highest factors affecting the QOL in patient on MHD overall. This may be because of the accessibility and quality of the studied HD Centers, the housing facility that they live in it, and some questions related to the area and convention of house, the smaller city has easy transportation, and lower pollution, noise, and traffic compared to the bigger city in other countries. The social domain was at the third level of the QOL domain, the questions related to this domain were about personal relations with relatives, and friends and sexual activities that were impaired. however, the table illustrates that all domains were below the standard range value. The results are opposed to study in USA, 2018 said "Among the four domains of QOL, the residents in this study had a relatively higher QOL in the physical health domain and a lower QOL in the environmental domain" [16].

The younger patients had better QOL than older ones. by increasing age, the QOL decreases. There is increased the prevalence of ESRD on MHD in older age group, and in HD patients a negative impact on QOL with a more impact on physical activities. Study which was done in Suleimani- Iraq showed that more than half of ESRD patients were aged 50 years and older. The male-to-female ratio was almost similar in Suleimani [17]. Evaluated the age and health-related QOL of hemodialysis patients from Taiwan and found that age was significantly inversely associated with physical functioning [18].

In the study males had better QOL than female patients. May because those women with chronic illness might have lower levels of social support in their everyday activities as already stated in other studies [19].Study of 304 Italian dialysis patients reported that the QOL of the individuals varied according to gender. The physical dimension of QOL was higher in males.

In contrast, the study of the QOL of 100 Turkish hemodialysis patients and another in (2001) of 65 American hemodialysis patients both found that gender was not significantly different in determining QOL [10,23].

Regarding the level of education, our study showed that the level of education significantly affects QOL. QOL Increases by increasing the level of education. Illiterate had lower QOL than diplomas degree, and above. The educational program had a positive effect on the patients' knowledge regarding the concept of HD, vascular access care, complications, dietary restrictions, fluids restrictions, types of medications, and activities that can help the patients to adapt to disease and HD. A study showed that the educational program was proven effective in improving the knowledge of hemodialysis and the quality of life of patients receiving hemodialysis [20].

The study participants were from a single ethnic background; therefore, we had no opportunity to compare with other ethnic patients, however, we had some participants of Arab ethnicity, but it was difficult to measure ethnicity because they were small in number and the cultural and value system in people from the same social and ethnic groups. Several studies have examined the effect of ethnicity on QOL. Studies done with African American HD patients reported better health status and QOL compared with Caucasians [17] .Bakewell and colleagues found that Indo- Asians had lower scores of perceived QOL compared with white Europeans with Kidney failure. The global status report on non-communicable diseases (2010) stated that 80% of chronic disease deaths worldwide occur in low- and middle-income countries [21].

The marital status of participants had a significant effect on the quality of life of our participants. Single patients had better QOL, they had better in the psychological domain and the lowest score in the social domain. Married patients had better QOL than divorced or widowed. married patients had the lowest physical, while divorced and widowed were low in the social domain. Single patients had low responsibility than the married, widowed, or divorced were less supported socially by governorates. Study in us found that more than half of patients with kidney failure had evidence of marital disruption. Kao and colleagues found that marital status was not associated with QOL. Their findings are supported by a study on Hong Kong dialysis patients using the Chinese Dialysis QOL Scale, in which it was found that marital status had no impact on QOL [22] .

Employment affected by the long-term medical complications, resulting from kidney failure led to a decline in physical activities. Diminished working capacity and energy levels often lead to the inability to continue full-time employment. Study from the members of the Netherlands Cooperative Study on Adequacy of Dialysis have found that within one year the proportion of employed patients decreased from 31% to 25% in hemodialysis patients, and from 48% to 40% in peritoneal dialysis patients.

Sufficient income for HD patients plays an important role in providing the basic needs such as food and transportation, as well as buying the prescribed medication. Having sufficient income may impact the overall satisfaction with life and consequently having a better quality of life. In our data presented in Table 5 showed that monthly income and income sours significantly affected QOL p-value <0.05. by increasing income increase QOL, and those had himself or herself sours had good QOL. The data same as in both study in UK and Gorgia, they also found that a higher economic level was significantly related to better QoL [23] .

Co-morbid medical conditions are common in patients on dialysis. They are considered important contributing factors to clinical outcomes and QOL. Associated diseases, especially DM, are strongly related to the worst QOL scores in patients on dialysis. Cardiovascular diseases, DM, hypertension, and dyslipidemia are more common in individuals with CKD than in those with normal renal function. Left ventricular hypertrophy is an independent risk factor for an adverse clinical outcome, both in the general population and in chronic kidney disease patients as study done in Kurdistan-Iraq 2019 [24].

The Dialysis Outcomes and Practice Patterns Study documented the most common disorders including CVD, hypertension, and diabetes in 3,856 patients who were new to dialysis. Cardiovascular disease remains the major mortality risk in dialysis patients. Hyperphosphatemia and elevated calcium-phosphorus products are associated with cardiovascular calcification, including the aorta, carotid, and coronary arteries and cardiac valves, as well as the myocardial muscle. The complications of elevated Para-thyroid hormone are expected to decrease survival and QOL in dialysis patients [25].

In this study diabetic participants had significant differences in median score in the physical domain. DM did not affect the median of QOL. it may be because of two factors, overall ESRD patients had QOL too low in all four domains, or false negative. Diabetes has been associated with poorer QOL in HD patients as reported in the study by Lopez in Italy. However, in our study DM did not impact the scores. Several previous studies on DM confirmed that it directly affects QOL [25–26].

Dyslipidemia affects the median score of QOL. It is a strongly significant difference in QOL between patients who had dyslipidemia. Study in Kurdistan showed that Dyslipidemia is progressed to ischemic heart disease and heart failure. And severely affect QOL, dialysis hypotension, and incomplete sessions [24].

A large number of HD patients were anemic, and the reason for anemia among our participants had three factors. one is the results of CKD which appear during and after stage III. The second is the complication of HD blood loss in line each session, other decreased number of Nephrologist or specialist Nurses in the center to correct anemia properly, and patients have less knowledge about anemia or because of the costs of follow-up. (Breiterman-White, 2005) [25], Anemia negatively influences patients' energy and activity levels, sleep and eating behaviors, general health status, and sex life, and can cause muscle weakness, leg cramps, and shortness of breath reducing the QOL overall.

Duration of dialysis significantly affects QOL. Patients who had one year or less and those who have more than 5 years on dialysis had better QOL, while others had low QOL. The length of time on dialysis could lead to the extension of suffering from the consequences of kidney failure. HD patients not only have treatment-related stressors but have to deal with changes in their life, self-confidence, and family roles. Evaluated the physical capacity of 27 ambulatory HD patients living in the community for 16 months in Taiwan. They found that the physical capacity declined over the 16 months [26] .

Studying the predictors of QOL in 140 patients on dialysis (94 on hemodialysis and 46 on peritoneal dialysis) in three Brazilian dialysis facilities found that patients who had been on dialysis for short lengths of time had higher QOL scores compared to patients who have been on dialysis for a longer period.[27].

\Duration of dialysis plays an important role in affecting QoL in dialysis patients. Some of our patients did not complete the prescriptions time on dialysis, because of dialysis complications, especially hypotension. According to Vasilieva, in linear regression analysis, the duration of dialysis was a significant effect on the low physical component score in hemodialysis patients. A similar observation was made in Arab Emarat; duration of dialysis had a reverse correlation with QoL. As the duration of dialysis increases, the QoL of dialysis patients deteriorates.

Dialysis adequacy was not measured in our centers, except one. This may be due to the absence of nephrologists or specialist Nurses in those centers or the absence of adequate training. In some centers, the number of sessions per week is less than three times per week, and sometimes patients did not complete sufficient time because of hypotension or other dialysis complications. Twardowski (2004) [28]. showed that short, three times weekly hemodialysis did not improve patient outcomes. However, daily hemodialysis with a minimum of six sessions per week has improved patient outcomes. Daily dialysis and better fluid management results in patients experiencing "leg cramping episodes during dialysis, fewer headaches, less hypotension, fewer episodes of dizziness, decreased fluid restriction, decreased interdialytic weight gain, fewer episodes of shortness of breath, and a reduction in the sensation of easily feeling cold" (Heidenheim, & Lindsay, 2003) [29].

Compared six times per week HD, with conventional (three times per week) in-center HD on a total of 378 patients from 54 community-based HD facilities in North America. The trial found that frequent daily dialysis improves optimal blood pressure control, regression of left ventricular hypertrophy, optimal hyper phosphataemia control, indices, and improvement in QOL [30].

In conclusion health-related quality of life in patients on maintenance hemodialysis was severely affected. Both clinical and nonclinical factors such as demographic; age, gender, educational level, marital status, employment, area, and family member. Income sources, monthly income. Dialysis adequacy; dialysis duration, time on dialysis session, type of accessory, and comorbidities. Severely affects the HRQOL, inpatient on MHD.

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