Health Related Quality of Life in Chronic Hemo-dialysis Patients and its relation to age, sex and educational level

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Abstract: Background: Worldwide, hemodialysis (HD) constitutes the most common form of renal replacement therapy (RRT), so it's so important and vital to evaluate quality of life in hemodialysis patient. **Objectives:** Evaluation of health related quality of life (HRQOL) in chronic hemodialysis Patients. **Methods:** The study was conducted in a cross-sectional approach to evaluate HRQOL in patients on maintenance HD at dialysis unit in Tanta City, The study was multi-centricat dialysis and carried out at 200 stable patients on maintenance HD, The kidney disease quality of life-36 questionnaire was used for data collection, Collected data were organized, tabulated and statistically using SPSS virgin "19", the level of significance was adopted at $P < 0.005$. **Results:** this study showed that 88.2 % of patient among 200 patients have poor quality of life due to burden of kidney disease, 10.3 % are average while 1.5% only have good quality of life, 15.7 % only patients have a good work status, and 33.3 % are average, while 51 % are poor work status. **Conclusion:** Huge number of patients had poor quality of life, which was influenced by several factors such social support and dialysis staff encouragement, also poor QOL have a big burden on work status, patients above 60 years old were more satisfied than patients less than 60 years old, male patients have a better quality of life than female in the following items social function, energy/fatigue.

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Key words: chronic kidney disease, hemodialysis, health related quality of life

1. Introduction:

The World Health Organization defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" [(1)]. Now, the Health Related Quality Of Life (HRQOL) represents the effects of individual health (including the effects of both disease and its treatment) on physical, cognitive, and social functioning in daily life [(2)].

Dialysis as a treatment for CKD prolongs most of the patient's life. However, dialysis patients have short survival together with considerable loss of HRQOL. In addition, the dialysis treatment itself represents a considerable burden on daily life due to time taken to obtain dialysis, expense of treatment and repeated hospitalization. Quality Of Life (QOL) is greatly influenced by HRQOL, and is probably just as, if not a more important determinant of successful treatment as is survival [(3)]. Therefore, careful assessment of HRQOL can give a guide to the medical providers to improve the health services and help proper management of diseases [(4)].

Many factors contribute to HRQOL in hemodialysis patients. Residual kidney function has been associated with better HRQOL [(5)]. Age has a strong effect on QOL of those patients. Most studies show that physical aspects of QOL deteriorate with advancing age [(6)]. Other factors as race and culture are likely to affect QOL[(7)].

2. Patients and methods

Study design

The study was multi-centric and was conducted in a cross-sectional (observational) approach to evaluate the health related quality of life (HRQOL) in patients on maintenance hemodialysis at dialysis unit in Tanta City.

Study settings

The study was conducted in many hemodialysis units at Tanta city including Tanta university hospital, and some governmental and private centers.

Study Population and Sample Size

This study was carried out on 200 stable patients with End Stage Renal Disease (ESRD) on regular hemodialysis.

Inclusion criteria:

Patients on regular hemodialysis at dialysis for more than 3 months.

Exclusion criteria:

1. Patients under age 18.

2. Those who cannot complete a KDQOL-36 due to cognitive impairment, dementia, active psychosis.
3. Patients on dialysis less than 3 months.
4. Patients who refuse to complete the KDQOL-36.

Method of sample selection:

The sample selection was based on convened method, the total number of patients was 200, in which 50 questionnaires was distributed in every dialysis center, 49 patients were selected from Tanta University Hospital and the remaining patients were selected from the other centers.

No subjects dropped out of the study.

Methods

The overall study period started from September 2015 to September 2016.

Clinical and laboratory assessment:

All patients in this study were subjected to

1-Full history taking:

Demographic data (age and sex), anthropometric data (weight, height and body mass index) and etiology of end stage renal disease. Focusing on social status and problems, financial status, psychological status, sexual function and drug history.

2-Assessment of Health Related Quality of Life (HRQOL)

Patients fill in the survey questionnaire independently during the first 2 hours of dialysis. Taking the survey outside of the dialysis unit was discouraged, since we could not know how involved the patient was in completing the survey and we may not get the survey returned. For patients who could not read or write, the questionnaire was administered by the researcher himself with the assistance of an interpreter.

The KDQOL questionnaire was used for data collection. This questionnaire is a kidney disease-specific measure of HRQOL. The first version contained the Medical Outcomes Study Short Form 36 (MOS SF-36) as a generic chronic disease core, and added items relevant to patients with kidney disease, such as symptoms, burden of illness, social interaction, staff encouragement, and patient satisfaction [(8)].

The KDQOL-36 questionnaire was used in this study as measurement tool for assessments in dialysis facilities because of its ease of administration with relatively minimal burden on patients and staff [(9)].

The KDQOL-36 consists of the SF-12, which measures physical and mental functioning, burden of kidney disease subscale, symptoms and problems subscale, and effects of kidney disease on daily life subscale, In which the questionnaire include 19 item.

Table (1): Recoding items

Item number	Original response category	To record value of
4a-d, 5a-c, 21	1 2	0 100
3a-j	1 2 3	0 50 100
19a, b	1 2 3 4	0 33.33 66.66 100
10, 11a, c, 12 a-d	1 2 3 4 5	0 25 50 75 100
9b, c, f, g, I, 13e, 18b	1 2 3 4 5 6	0 20 40 60 80 100
20	1 2	100 0
1-2, 6,8,11b,d,14a-m,15a-h, 16a-b, 24a-b	1 2 3 4 5	100 75 50 25 0
7, 9a, d, e,h, 13a-d, f, 18a,c	1 2 3 4 5 6	100 80 60 40 20 0

Note: item 1 and item 7-8 are scored slightly different by investigations from the New England Medical Center (c.f. Haysetal., 1993). Four of the KDQOL-SF^{TM} items not listed in this table (items 16,17, 22,23) require additional instruction.

1-Symptoms of kidney disease covered by 12 questions

2-Effects of kidney disease covered by 8 questions

3-Burden of kidney disease covered by 4 questions

4-Work status covered by 2 questions

5-Cognitive function covered by 3 questions

6-Quality of social interaction covered by 3 questions

7-Sexual function covered by 2 questions.

8-Sleep disorder covered by 4 questions

9-Social support covered by 2 questions

10-Dialysis staff encouragement covered by 2 questions

11-Patient satisfaction covered by 1 question

12- Physical functioning covered by 10 questions.

13- Role--physical covered by 4 questions.

14- Pain covered by 2 questions.

15- General health covered by 5 questions.

16- Emotional well-being covered by 5 questions.

17- Role—emotional covered by 3 questions.

18- Social function covered by 2 questions.

19- Energy/fatigue covered by 4 questions.

All questions were answered within an average from 95 % - 100 % except sexual questions were answered by 76 % only.

The scores of the KDQOL-36 questionnaire are liket scale which transformed into standardized score of 0 to 100, in order to maintain uniformity in the scores. Higher scores mean the better quality of life of patients [14]. The QOL index of each domain and their correlations with different items were assessed.

Statistical analysis

Collected data were organized, tabulated and statistically using SPSS virgin "19" (Statistically Package for Social Studding). Numerical data were presented as mean and strand deviation and t tests were used for testing significance between subgroups. For categorical data the number and percentage were calculated and. The level of significance was adopted at $P < 0.005$.

Ethics

1. No-intervention was done for patient only question was filled in the questionnaire after taken written consent.
2. Confidentiality was granted during the whole period of the study.

Results

Table [2]: Age in years among study population.

Variables	Number (200)	%
Age in years:		
<20	2	1.0
20-	7	3.5
30-	18	9.0
40-	27	13.5
50-	49	24.5
60-	44	22.0
70+	14	7.0
Missing data	39	19.5

The present study showed that 46.5 % among the 200 patient are within range 50 and 60 years old.

Table [3]: Educational level among studypopulation.

Variables	Number (200)	%
Educational level:		
Illiterate	31	15.5
Primary	25	12.5
Preparatory	31	15.5
Secondary	55	27.5
University	49	24.5
Postgraduate study	7	3.5
Missing data	2	1.0

The present study showed that 52 % among the 200 pateint are secondary graduated or have Bachelor/license degree.

Table [4]: Gender among studypopulation.

Variables	Number (200)	%
Gender:		
Males	121	60.5
Females	76	38.0
Missing data	3	1.5

The present study was done on 200 patients. 121 are males which present 60.5%, 76 are females which present 38%, and 1,5% is missing data.

Table [5]: Marital status among studypopulation.

Variables	Number (200)	%
Marital status:		
Married	169	84.5
Not married	19	9.5
Missing data	12	6.0

The present study showed that 169 patients are married which present 84.5%. 19 patients are not married which present 9.5% and 6% did not answer the question.

Table[6]: Occupation among studypopulation.

Variables	Number (200)	%
Occupation:		
Full time working	9	4.5
Part time working	45	22.5
Unemployed	1	0.5
Retired	43	21.5
Disabled	1	0.5
Student	2	1.0
Housewife	29	14.5
Others	7	3.5
Missing data	63	31.5

The present study showed that 22.5 % among 200 patients were part time working and 21.5 % were retired.

Table [7]: Distribution of studied patients in relation to associated chronic diseases

Chronic diseases*	Number (200)	%
Don't know	46	23.0
Hypertension	91	45.5
Diabetes	25	12.5
Polycystic kidney	11	5.5
Chronic glomerulonephritis	24	12.0
Chronic pyelonephritis	1	.5
Others	14	7.0

*More than one disease was reported

Table [8]: Distribution of studied patients in relation to methods of filling in the questionnaire

Methods of filling in the questionnaire	Number (200)	%
Helped by a health care worker	48	24.0
Helped by a family member	31	15.5
Helped by someone else	10	5.0
Self filled	105	52.5
Missing data	6	3.0

The present study showed that 52% among the 200 patient can fill the questionnaire by themselves.

Table [9]: Percent distribution of studied patients in relation to kidney disease quality of life scales.

Kidney disease quality of life scales	Total score		
	> 50 % (Poor)	50-75% (Average)	< 75% (Good)
Patient satisfaction	26.8 %	54.0 %	19.2 %
Symptom/problem list	37.4 %	41.7 %	20.9 %
Effect of kidney disease	44.3 %	44.3 %	11.4 %
Burden of kidney disease	88.2 %	10.3 %	1.5 %
Work status	51.0 %	33.3 %	15.7 %
Cognitive function	27.1 %	48.2 %	24.7 %
Quality of social interaction	16.0 %	54.6 %	29.4 %
Sexual function	4.4 %	65.9 %	29.7 %
Sleep	37.9 %	54.0 %	8.1 %
Social support	41.7 %	23.6 %	34.7 %
Dialysis staff encouragement	8.0 %	60.3 %	31.7 %
Physical functioning	46.2 %	36.4 %	17.4 %
Role physical	80.8 %	14.1 %	5.1 %
Pain	58.4 %	29.4 %	12.2 %
General health	73.3 %	25.7 %	1.0 %
Emotional well being	41.2 %	45.7 %	13.1 %
Role emotional	84.8 %	3.0 %	12.2 %
Social function	34.0 %	51.3 %	14.7 %
Energy/fatigue	60.4 %	33.5 %	6.1 %

The present study showed that 88.2 % of patient among 200 patients have poor quality of life due to burden of kidney disease, 10.3 % are average while 1.5% only have good quality of life.

Table [10]: Effect of age on the different scales of kidney disease quality of life

Kidney disease quality of life scales	Age in years		T	P
	<60	60+		
Patient satisfaction	52.15 ± 20.77	60.92 ± 23.27	2.453	0.015*
Symptom/problem list	57.03 ± 21.66	54.80 ± 25.03	0.574	0.567
Effect of kidney disease	51.25 ± 21.49	53.07 ± 23.78	0.477	0.634
Burden of kidney disease	22.19 ± 19.59	21.43 ± 21.78	0.223	0.824
Work status	38.66 ± 39.20	21.05 ± 29.80	3.141	0.002*
Cognitive function	63.99 ± 19.35	64.48 ± 22.77	0.146	0.884
Quality of social interaction	64.92 ± 16.12	70.41 ± 20.20	1.756	0.082
Sexual function	73.94 ± 15.16	72.02 ± 18.50	0.448	0.655
Sleep	52.35 ± 19.03	49.70 ± 20.70	0.814	0.417
Social support	60.10 ± 27.77	63.19 ± 29.41	0.662	0.509
Dialysis staff encouragement	70.44 ± 20.12	75.22 ± 23.01	1.334	0.184
Physical functioning	52.15 ± 25.00	41.88 ± 25.25	2.420	0.017*
Role physical	17.40 ± 28.97	11.40 ± 22.69	1.444	0.151
Pain	47.43 ± 23.92	46.67 ± 24.80	0.190	0.850
General health	36.04 ± 15.50	34.65 ± 17.21	0.520	0.604
Emotional well being	53.28 ± 17.71	56.28 ± 21.16	0.959	0.339
Role emotional	16.83 ± 30.41	21.05 ± 37.07	0.733	0.441
Social function	53.06 ± 24.72	55.82 ± 26.92	0.656	0.513
Energy/fatigue	43.88 ± 18.62	41.31 ± 18.83	0.835	0.405

*Significant

The present study showed that there was significant difference regarding effect of age on the different scales of kidney disease quality of life in which patients above 60 years old were more satisfied than patients less than 60 years old, and regarding work status patients less than 60 years old have better quality of life than who were above 60 year, and the same regarding physical functioning, while the other study parameters show no significance between two groups.

Table [11]: Effect of gender on the different scales of kidney disease quality of life

Kidney disease quality of life scales	Gender		T	P
	Males	Females		
Patient satisfaction	56.39 ± 22.16	53.11 ± 21.35	1.109	0.309
Symptom/problem list	57.18 ± 21.09	50.49 ± 24.16	1.977	0.050
Effect of kidney disease	50.91 ± 22.23	51.79 ± 21.86	0.254	0.800
Burden of kidney disease	22.78 ± 21.50	20.52 ± 17.69	0.755	0.451
Work status	34.65 ± 39.42	28.00 ± 32.09	1.271	0.205
Cognitive function	63.61 ± 19.19	60.5 ± 22.17	1.032	0.303
Quality of social interaction	66.26 ± 17.98	67.91 ± 17.32	0.627	0.531
Sexual function	71.83 ± 16.03	67.31 ± 16.23	1.205	0.232
Sleep	52.67 ± 18.69	49.33 ± 19.30	1.197	0.233
Social support	61.08 ± 28.20	58.74 ± 28.35	0.564	0.573
Dialysis staff encouragement	73.46 ± 21.37	70.66 ± 22.12	0.860	0.391
Physical functioning	50.18 ± 25.26	48.10 ± 26.66	0.530	0.597
Role physical	16.39 ± 28.46	15.79 ± 28.82	0.142	0.887
Pain	47.27± 23.22	43.61 ± 22.10	1.085	0.279
General health	36.81 ± 16.41	33.36 ± 17.25	1.398	0.164
Emotional well being	54.97 ± 16.78	50.79 ± 20.52	0.1556	0.121
Role emotional	22.13 ± 37.40	14.66 ± 28.07	1.484	0.139
Social function	55.25 ± 23.72	46.50 ± 25.30	2.439	0.016*
Energy/fatigue	45.14 ± 18.62	38.93 ± 20.48	2.176	0.031*

*Significant

The present study showed that there was significant difference regarding effect of gender on the different scales of kidney disease quality of life in which male patients have a better quality of life than female in the following items social function, energy/fatigue, while the other study parameters show no significance between two groups.

Table [12]: Effect of educational level on the different scales of kidney disease quality of life

Kidney disease quality of life scales	Educational level		T	P
	Less than secondary	More than secondary		
Patient satisfaction	50.58 ± 21.46	58.33 ± 21.39	2.514	0.013*
Symptom/problem list	47.35 ± 19.71	60.43 ± 23.07	4.051	0.001*
Effect of kidney disease	44.39 ± 19.70	56.46 ± 22.21	3.800	0.001*
Burden of kidney disease	16.69 ± 15.14	25.87 ± 22.50	3.228	0.001*
Work status	24.10 ± 28.54	38.32 ± 40.97	2.816	0.005*
Cognitive function	56.25 ± 19.17	67.45 ± 19.98	3.980	0.001*
Quality of social interaction	63.10 ± 16.57	69.75 ± 17.94	2.637	0.009*
Sexual function	66.32 ± 12.61	74.06 ± 16.96	2.466	0.016*
Sleep	50.27 ± 18.10	52.07 ± 19.60	0.658	0.512
Social support	58.11 ± 26.91	62.13 ± 29.30	0.990	0.323
Dialysis staff encouragement	72.84 ±19.08	71.50 ± 23.58	0.425	0.672
Physical functioning	45.45 ± 26.36	52.31 ± 24.85	1.795	0.074
Role physical	14.83 ± 28.79	17.05 ± 28.32	0.541	0.589
Pain	40.26 ± 20.84	50.71 ± 23.73	3.219	0.002*
General health	34.30±15.96	36.50 ± 17.42	0.902	0.368
Emotional well being	51.03 ± 18.56	55.60 ± 18.44	1.725	0.086
Role emotional	12.94 ± 29.59	24.24 ± 36.66	2.382	0.018*
Social function	49.71 ± 23.38	53.98 ± 25.84	1.208	0.229
Energy/fatigue	39.48 ± 18.12	45.15 ± 20.16	2.038	0.043*

*Significant

The present study showed that there was significant difference regarding effect of educational level on the different scales of kidney disease quality of life in which patients who didn't reach secondary education have a worse quality of life in the following item patient satisfaction, symptom/problem list, effect of kidney disease, burden of kidney disease, work status, cognitive function, quality of social interaction, sexual function, pain, role emotional and energy/fatigue than patient who reached secondary education, while the other study parameters show no significance between the two groups.

4. Discussion:

Regarding cause of end stage renal disease, The present study showed that the most common cause of end stage renal failure is hypertension45.5% and the second most common cause is diabetes 12.5%, followed by Chronic glomerulonephritis12.0% and this was against the results of **Jong-Yeon et al 2012**who concluded that out off 237 patients diabetes mellitus was the most common cause ofend stage renal disease of 39.7 %, followed by hypertension 29.1% and glomerulonephritis 10.5 % **Sanjeev et al 2001**, agree with us as they found that hypertension was the most common (29.9 %) cause of end stage renal disease, followed by diabetes mellitus(24.6%), Chronic glomerulonephritis (12.7%), and this was against the study done by **Jeannette et al 2001**, she found that out of 659 patients the majority had glomerulonephritis as primary kidney disease 60%[10, 11, 12].

Regarding work status, The present study showed that 46.5 % among the 200 patient are within range of 50 and 60 years old, 60% were male, The present study showed that 51 % are poor work status, and 33.3% are average, 15.7 % only among 200 patients have a good work status, and this was in agreement the study done by **Jeannette. Et al 2001**, In their study, 659 patients were included, the mean age was 49 years, 60% were males about one third of the patients were employed (35%), and about one third received a disability insurance benefit (36%). A minority were employed and received at the same time (partial) disability insurance benefit (6%), so the present study and the their study showed that the majority of patient have a bad quality of life regarding work status[12].

Regarding age, The present study showed that there was significant difference regarding effect of age on the different scales of kidney disease quality of life in which patients above 60 years old were more satisfied than patients less than 60 years old, and this was in agreement with study done by **Michelle et al 2015**whoconcluded that older patients were more satisfied, and regarding work status patients less than 60 years old have better quality of life than who were above 60 year, and the same regarding physical functioning, while the other study parameters show no significance between two groups. So younger age patient have better quality of life which is also in agreement with the study done by **Alpha Oumar Bah et al 2014** who conclude that the poor quality of life group was the older and good quality of life was associated with younger age, also in agreement with study done by **Fatma et al 2013,** who compared theKDQOL-36 score inpatients < 65 years and ≥ 65 years, it was seen that patients aged 65 years or over had poorer KDQOL-36 subgroups scores, while this was against with study done by **Pablo et al 2001** who concluded that elderly patient on renal replacement therapy (Hemodialysis and kidney transplant) had relatively better health related quality of life than younger patients[13,14,15,16].

Regarding gender, The present study showed that there was significant difference regarding effect of gender on the different scales of kidney disease quality of life in which male patients have a better quality of life than female in the following items social function, energy/fatigue, while the other study parameters show no significance between two groups, so men had better quality of life than women, and this was in agreement with study done by **Alpha Oumar Bah et al 2014** who concluded thatwomen had a poorer QOL as compared to men, and this was in agreement with study done by **Jong-Yeon et al 2013** who found thatin physical components score; female, older and jobless patients, patients with stroke or diabetes mellitus, had significantly lower quality of life than the others. **Aaron et al 2013**had another opinion**;** comparing women and men, no statistically significant difference was observed in KDQOL-36 subgroups[14, 10, 17].

Regarding education, The present study showed that there was significant difference regarding effect of educational level on the different scales of kidney disease quality of life in which patients who didn't reach secondary education have a worse quality of life in the following item patient satisfaction, symptom/problem list, effect of kidney disease, burden of kidney disease, work status, cognitive function, quality of social interaction, sexual function, pain, role emotional and energy/fatigue than patient who reached secondary education, while the other study parameters show no significance between the two groups and this was in agreement with the study of **Fatma et al 2013** who concluded that low educational level was associated with poorer HRQOL in their HD patients as with other studies, and this also was in agreement with study of **Jong-Yeon et al 2013** who concluded that less-educated, patients had

significantly lower quality of life than the educated.[15, 10]

Conclusion:

Quality of life isn't a matter of luxury but it's essential for life as same as any treatment or drugs, The present study have shown that many factors can affect the HRQOL in hemodialysis patients as age, sex and educational level and this may help disease management in the future.

Recommendations:

Nephrologists have to put improving quality of life concept in their mind, and should concern more about the assessment of health related quality of life for end stage renal disease patients on regular hemodialysis, and give it a priority, as our role and mission aren't only to treat our patients but also to reach the best quality of life as we can.

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