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Original Research

Health-Related Quality of Life for Patients Undergoing Maintenance Hemodialysis

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Abstract:

Background: Hemodialysis have a negative impact on all aspect of life, including the physical, psychological, socioeconomic, and environmental ones, which compromise quality of life. In the recent decade Accumulated data demonstrate how dialysis outcomes are significantly influenced by health-related quality of life (HRQOL). Therefore, it is important to pay attention not only on how long but also on how well ESRD patients live.

Objectives: to assess HRQoL for Patients Undergoing Maintenance Hemodialysis.

Methods: a quantitative descriptive research design was used. purposive (non-probability) sample consists of (50) patients. All the patients diagnosed with End Stage Renal Disease on maintenance hemodialysis selected from hemodialysis Centres at AL Hussein Teaching Hospital and AL- Nasiriyah Teaching Hospital. The study was conducted from July 17st 2023 to February 24th, 2024. The questionnaire consisted of (3) parts include: Part I: Socio-Demographic Data Part, Part II: patient medical and clinical history Part III: Kidney Disease Quality of Life Scale Short Form36 (KDQOL-SF36). Data were investigated using Statistical Package for Social Science (SPSS) software designed for Windows Version 26. Descriptive Statistical Data Analysis (Frequencies and percentage, Mean, Standard deviation and Inferential Statistical Data Analysis (t-test and Analysis of Variance (ANOVA)).

Results: The results show that the overall health-related quality of life of the patients was very low (M ±SD = 19.62 ±3.83), and SD the highest score was effect of kidney disease (M ±SD = 28.1 ±5.9) and the lowest score was Physical Component Summary (M ±SD= 16.25 ±7.6). The finding shows there were statistically significant relations between the patients HQoL domains, and gender, marital status, occupation, monthly income and number of dialysis sessions in week. On the other hand there were no statistically significant relation between patients' HQoL and age, level of education, and residence of the studied patients within p value = .05 or higher.

Conclusion: HRQOL of hemodialysis patients is impaired. The most important sociodemographic factors relating to HRQOL were gender, marital status, occupation, monthly income and number of dialysis sessions in week of the studied patients.

Recommendations: comprehensive programs, including health education programs are recommended and performing interventional studies for CKD patients to improve their HQoL and to measure the health changes for that patient to ensure that the intervetion will be helpful.

Key Words: Health Related Quality of Life, Hemodialysis Patients

Introduction:

Chronic renal failure (CRF), which develops when the kidneys have lost more than 95% of their normal function, is one of the leading causes of death and disability in the world. The average global growth of CRF is rising over the past five years, has been 8% per year due to its rising prevalence. Until 2030, it is predicted that more than 70% of patients with renal are expected to living in developing nations. [1,2]

Renal function is thought to permanently deteriorate in end-stage renal disease (ESRD). It is regarded as a fatal and life-threatening condition for which only hemodialysis (HD) or peritoneal dialysis can ensure survival. The only available forms of therapy are kidney transplant or dialysis. End-stage renal disease requires lifelong treatment, which may include renal replacement therapy, education, and dietary and fluid restriction. [3,4]

An estimated 37 million Americans (15% of the adult population; more than 1 in 7 persons) are affected by kidney disease. 90% of people with renal illness are unaware of their condition.2 The ninth most common cause of death in the US is kidney illness. Nearly 786,000 Americans with ESKD, with 71% receiving dialysis and 29% receiving a kidney transplant. Between 55 and 818 cases of end-stage kidney disease (ESKD) per million people were reported in the Middle East, which includes Iran, Egypt, Turkey, Lebanon, Tunisia, Syria, Yemen, Qatar, and Iraq. Furthermore, among the top twenty causes of mortality, renal failure is ranked sixth, according to the annual report of the Ministry of Health in Iraq for 2022. [5,6,7,8]

Hemodialysis interferes with the patient's and family's lifestyle and changes it. Employment, eating habits, sense of security, vacation activities self-esteem, social interactions, and the capacity for enjoyment of life are the main life domains affected by ESRD and its treatment. These causes have a negative impact on all aspect of life, including the physical, psychological, socioeconomic, and environmental ones, which compromise quality of life. Nowadays, improvements in medicine, advanced technology, as well as better patient care have significantly increased the survival of ESRD patients. In the recent decade Accumulated data demonstrate how dialysis outcomes are significantly influenced by health-related quality of life (HRQOL). Therefore, it is important to pay attention not only on how long but also on how well ESRD patients live. [9,10]

A patient's comprehensive perception of physical and health mental represents HRQOL, which is regarded as a health outcome. Poor HRQOL in patients with CKD can be caused by both renal and extra-renal conditions). Complex comorbid conditions that patients with severe CKD may have can lower HRQOL1. Patients with CKD at all stages, including those receiving dialysis, have considerably poorer HRQOL scores than the general population. [11]

The impact of health status on quality of life is the main focus of health-related quality of life (HRQOL). Low HRQOL scores are associated with both medical and socioeconomic status in ESRD patients. According to the KDOQI guideline, frequent measures of HRQOL are advised to indicate the quality of treatment given to hemodialysis patients. Low HRQOL scores in ESRD patients are known to be linked to higher mortality and hospitalization rates. [12,13]

There is no any study related to evaluation of health- related quality of life for hemodialysis patients has been conducted in Iraq, despite the increasing number of patients on maintenance hemodialysis.

Methods:

Design of the Study:

A quantitative descriptive research design conducted on patients with maintenance hemodialysis.. The study was started from July 17th 2023 to June 20th 2024 mission to carry out the study.

Ethical Considerations:

The participants were informed that their participation was voluntary in the study. The purpose and the benefits of the study was explained by the researcher. The participants told that their data would be kept private and safe during and after

their participation in the study. They were also told that they might leave the research at any moment and that their participation was entirely optional. The researcher also told the participants that their names will be kept anonymous in the study's introduction, publishing.

Setting of the Study:

The study was conducted at two hemodialysis centers in an Nasiriyah City.; one of these centers is located in the AL Hussein Teaching hospital and the other at An Al- Nasiriyah Teaching hospital, in an Nasiriyah city, Thi-qar, Iraq.

The Sample of the Study:

In order to obtain an accurate data and a representative sample, purposive (non-probability) sample consists of (50) patients was selected. All the patients with diagnosed End Stage Renal Disease on maintenance hemodialysis.

Inclusion and Exclusion Criteria:

The sample was selected according to the following criteria: Adult patients, both of sexes, Patients who were in stable condition, Patients with Patients with end stage renal disease on maintenance hemodialysis for at least six months, Persons those who are free from psychiatric illness, Patients who agree to conduct the questionnaire. Exclusion Criteria: Patients who do not know to read and write, Patients who refused to participate in the study.

Instrument of the study:

The questionnaire consisted of (3) parts include: Part I: Socio- Demographic Data Part: It consists of (6) items. It is concerned with the collection of basic socio-demographic data gained from study participants, including age, gender, mitral status, Educational level, Occupation, Monthly income .Part II: patient medical and clinical history: It includes data on history of chronic renal failure, duration of hemodialysis treatment , times of hemodialysis sessions in week, exercise, presence of edema, insomnia and itching, measurement of blood pressure and body weight and finally biochemical composition of the blood (sodium, phosphorus, calcium, sugar, hemoglobin urea and creatinine).

Part III: Kidney Disease Quality of Life Scale Short Form36 (KDQOL-SF36) version 1 (Arabic version): The kidney disease quality of life scale Short Form 36 (SF36) was adopted and translated by (Elamin, et al., 2019) to assess quality of life among patients with kidney disease. The KDQOL-36 is a short version of KDQOL-SF that includes only 36 questions. Each subscale score ranges between 0 and 100, with increasing values equating to better health. The first part of the KDQOL-36 (items 1–12) includes the medical outcomes study short form 12 health survey (SF-12) as a generic core. These 12 items make up the physical component summary (PCS) and mental component summary (MCS) scales.

The second part (items 13–16) constitutes burden of kidney disease subscale. The third part (items 17–28) covers symptoms and problem list subscale. The fourth part (items 29–36) covers the effect of kidney disease subscale.

Validity of the Instrument:

The validity of the Instrument had been achieved by 20 experts from different scientific branches.The instrument is considered valid after taking all recommendations in consideration.

Reliability of the Questionnaire:

The use of test-retest reliability for the questionnaire was calculated. The researcher finds out the stability by computing the instrument's Pearson coefficient by using SPSS version 26. The results found that the coefficient of correlation was ($r = 0.87\%$) at the level ($p \leq 0.05$); such estimations have been statistically adequate and significant.

Statistical Data Analysis:

After completion of data collection was tabulated and analyzed using suitable Statistical Package for Social Sciences (SPSS) version 26. Descriptive Statistical Data Analysis include Frequencies and percentage, Mean, Standard deviation. Inferential Statistical Data Analysis include t-test and Analysis of Variance (ANOVA))

Results:

Table (1): The Distribution of the Study Samples (Study and Control groups) according to their Demographic characteristics.

Variable	Groups	Study group	
		Freq.	%
Age Groups	From 18 – 27 yrs.	10	20
	From 28- 37 yrs.	15	30
	From 38 – 47 yrs.	5	10
	From48 - 59	20	40
	Total	50	100
Sex	Male	28	56
	Female	22	44
	Total	50	100
Marital Status	Single	10	20
	Married	30	60
	Divorced	5	10
	Widow	5	10
	Total	50	100
Educational level	Primary school	5	10
	Middle school	25	50
	Secondary school	10	20
	Diploma and above	15	30
	Total	50	100
Occupation	Student	1	2
	Housewife	22	44
	Government worker	5	10
	Free worker	2	4
	Unemployed	20	40
	Total	50	100
Monthly income	Insufficient	23	46
	Barly sufficient	20	40
	Sufficient	7	14
	Total	50	100
Residency	Urban	15	30
	Rural	35	70
	Total	50	100

Freq. = frequency, % = percentages

Results in table 1 presented that 40 percent of the study group were within age group 48 – 59 years old, In relation to participants' sex 56 percent of the study group were males and 44 percent were females. About the martial status of the study sample, 58 percent of the were married. Corresponding to the educational level of the study sample, 39 percent of the within Middle school level.

The occupational status of the study sample presented that 46 percent were housewives and 39 percent were unemployed. In addition, 47 percent have insufficient monthly income and 40 percent have barely sufficient monthly income. Moreover, 61 percent were lived in rural area.

Table (2): Distribution of the Patients according to the Medical Information

Variable	Groups	Study group	
		freq.	%
When the renal failure started	Less than one year	20	20
	From 1- 5 yrs.	64	64
	From 6- 10 yrs.	13	23
	From 11- 15 yrs. And over	3	3
	Total	100	100
Duration of hemodialysis	Less than one year	21	21
	From 1- 2 year	46	46
	From 3 - 4 year	29	29
	More than 4 years	4	4
	Total	100	100
Number of Hemodialysis sessions / Week	Twice hemodialysis sessions/ week	78	78
	Three hemodialysis sessions / week	22	22
	Total	50	100

Freq. = frequency, % = percentages

Table 2 presented the distribution of the study sample according to their medical records. It was revealed in this table that most of the study sample 64 percent have renal failure started from 1 – 5 years. In addition, 46 percent of them have hemodialysis for from 1-2 years. The majority of the study sample 78 percent have two hemodialysis sessions weekly.

Table (3) The Distribution of the Study Samples' (patients) of the quality-of-life domains

Domines		Mean	SD
Medical outcomes	Physical Component Summary	16.25	7.6
	Mental Component Summary	19.91	9.93
Burdens of kidney disease		17.5	5.5
Problems/symptoms list		21.6	4
Effect of kidney disease		28.1	5.9
Total QoL		19.62	3.83

Table 3 shows the mean results of KDQOL - 36 domains. the highest score of its subscale was Effect of kidney disease 28.1 (SD 5.9), and the lowest score was Physical Component Summary 16.25 (SD 7.6).

Table (4): The relationship between Patients' HQoL with their demographic characteristics by ANOVA and t-test

Socio- demographic variables (Number)		QoL Study group (N= 50)			
		Mean ± SD	D.F.	F	Sig.
Age	18-27 (10)	18.47 3.6	3	1.67	.186
	28-37 (15)	21.32 3.4			
	38-47 (5)	19.79 .0			
	48-59 (20)	19.3 5.01			
Sex (t-test)	Male (28)	18.5 2.28	1	4.183	.046
	Female (22)	20.7 4.7			
Marital status	Single (10)	20.6 .51	3	4.34	.009
	Married (30)	18.3 4.3			
	Divorced (5)	20.6 .0			
	Widowed (5)	24.06 .0			
Level of education	Primary (5)	19.7 .0	3	.139	.93
	Middle (25)	19.5 4			
	Secondary 10)	20.6 .0			
	Diploma and bachelor's (15)	19.3 4.8			
Occupation	Housewife (22)	20.7 4.7	2	3.34	.004
	Gov. work (8)	17.1 2.7			
	Unemployed (20)	19.4 1.32			
Monthly income	Insufficient (23)	18.7 5	5	69.86	.000
	Barley sufficient (20)	21.1 .0			

	Sufficient (7)	18.9 1.2			
Residence (t-test)	Urban (15)	17.34 2.23	1	.091	.75
	Rural (35)	20.6 3.9			
Start of renal failure			2	.41	.66
Duration of hemodialysis			2	7.8	.46
No. dialysis session in week (t-test			1	4.83	.033

Table 4.10. showed the relations between demographic characteristics and patients QoL domains, in which gender, marital status, occupation, monthly income and number of dialysis sessions in week of the studied patients presented significant relation with their total quality of life within p value = .05 or higher.

Discussion:

The findings of data analysis indicated that the majority of the study sample aged from 48 to 59 years old, which accounted for (20) of study participants with percent (40%) for both study and control group. This result agreed with a study carried out to evaluate the effectiveness of resistance exercise therapy on patients' physiological status at Al-Sadder Medical City and Al-Hakeem Hemodialysis Center in Al-Najaf Al-Ashraf City by Alkhaqani (2022) that showed the highest of study sample were at age group (50- 59) years. [14]

Relative to gender, the results indicated that (56%) of the study group which accounted for (28) and (52%) of the control group which accounted (26) were male ; while, the remaining were female. In comparing with other studies, a study conducted at Al- Muthana Teaching Hospitals to evaluates the effects of an educational program on patients' knowledge about vascular access care in (2022) by Hussein and Ahmed who found that male accounted for 28 of 50 participants. [15]

This result was supported by Pretto, et al. (2020), who demonstrated in their study entitled "Quality of life of chronic kidney patients on hemodialysis and related factors" that the majority of hemodialysis patients were male with percent (63.4%). [16]According to the participants' marital status, the majority of them were married with 60% of the study group and 56% of the control group. This result was similar to a study done by Alkhafaji and Al-Mayahi (2023) in Thi-Qar governorate to evaluate the influence of educational program on hemodialysis patients' knowledge about uremic pruritus, who stated that the largest proportion of hemodialysis patients were married with (80%, 83.3%) for study and control groups respectively[17] A study conducted to evaluate the effectiveness of an education and exercise intervention on hemodialysis patients' quality of life at 2019 by Lazarus also supported this result, who reported that 111 of 150 hemodialysis patients were married. [18]

Concerning the educational levels, half of the study group were middle school, on the other hand in the control group the heights percentage were secondary education with percent 36%. This finding agreed with the study carried out by Hamza, et al. (2022) at Beni-Suef university hospital in Egypt, in order to determine the effect of an educational program concerning self-care behavior for hemodialysis patients, who found the majority of the participant have secondary school education which accounted for 40 % of the entire sample. [19]

Additional support is non-randomized, single-arm, single-center trial conducted in a hemodialysis center in a teaching hospital in Zhuhai, China by Yin, et al. (2021) for developing As well as to analyze the effectiveness of an education program focusing on phosphate control among patients on hemodialysis, who reported that the percent of

Middle school participants were 60.1% of the entire sample. [20]

Relative to occupation status, the results indicated that a highest percentage of the sample are housewife and Unemployed with the percent 44 % and 40% respectively for study group and the same for the control group with percent 48% housewife and 38% unemployed. Supportive evidence for these findings have been found Hermis and Abed (2021) who reported that the majority of respondents were housewife and unemployed that accounted for 33.3% and 20% respectively in the study group and 26.7% of the control group were housewife and 30% of them were unemployed. [21]

Also this finding was consistent with a study conducted in four hemodialysis centers in Yazd, Iran to examine the correlation between self-efficacy and knowledge among patients with end stage renal disease undergoing hemodialysis by Maazallahi et al. (2024) who found that the majority of participants (78.6%) were unemployed. . [22]

In regards to the monthly income, the majority of the study sample are within insufficient and barely sufficient monthly income with the percent (46%, 40%) respectively for the study group and (48%, 40%) respectively for the control group. the findings agreed with a study that evaluate the effect of an education intervention on quality of life of hemodialysis based on family-centered empowerment model on hemodialysis patient and their caregivers in Tanta University Hospitals and Kafr El- Sheikh University Hospital by Al-agamy, et al. (2022) who found the half of the study participants were within insufficient monthly income.[23]

Additionally, the findings agreed with a study that evaluate the effect of an educational intervention on the quality of life of patient undergoing hemodialysis and their caregivers based on family-centered empowerment model in Dialysis unit at Tanta University Hospitals and Kafr El- Sheikh University Hospital in Egypt by Al-agamy, et al. (2022) who found half of the study participants were within insufficient monthly income.[23]

Finally, regarding residency, the highest percentage of the study participants are living in rural area with percent 70% for study group and 52% for control group. this result agrees with a study done in the dialysis units of Benha University Hospital and Benha Teaching Hospital by Wassef and et al. (2023) to assess HRQOL of hemodialysis patients.[24]

Similar results were obtained by Doan et al. (2021), who conducted a cross-sectional study to examined factors associated with healthcare cost, HRQOL,and KDQOL in patients undergoing hemodialysis in Vietnam showed that 109 of 160 patient living in rural areas with percent (68.1%).. [25]

the majority of the participants had history of renal failure from 1-5 year with the percentage 60% of the study group and 68% of the control group. The results agree with a study conducted to evaluate the effectiveness of an education program about dietary regimen on knowledge of hemodialysis patients at Al- Hussein Teaching Hospital in Al-Nasiriyha City by Shinjar, Bakey, and Khudur (2018) who concluded that 65% of the study participants had history of renal failure from 1-5 year. . [26]

Al-Jabi1 et al., (2023), founded in their study " A multicenter descriptive analysis of anemia management in hemodialysis patients and its association with quality of life" that 54.9% of the study participants had history of renal failure for less than five years. [27]

The results disagree with the findings of Mohammed and Naser (2016) who found the majority of the sample had history of renal failure before one year ago.[28]

Regarding duration of hemodialysis, the majority of the study group had history of hemodialysis from 1- 2 year which accounted for 30 (60%), while the majority of the control group had history of hemodialysis from 3-4 year which accounted for 24 (48%) These results supported by a study conducted at hemodialysis units of Al-Imamain Al-Kadhumain Medical City by Fadhil, et al. (2023) who concluded that the duration of hemodialysis lasted 3.39±2.3 year. [29]

The results indicated that 40 patients of the study group with precent (80%) and 38 patients of the control group with percent (76%) had done hemodialysis sessions twice per week. The results supported by results of Neamah and Ali (2023) who conducted this study to evaluate pain level experienced by patients on hemodialysis due to arteriovenous fistula puncture in Al-Najaf Al-Ashraf, who concluded that 34 (85%) of the total sample had twice per week. [30]

A study carried out by Aliwy and Mohammed(2018) disagree with the current study results who indicated that 50% of the study sample had done hemodialysis sessions three per week. [31]

The study results indicated that the overall quality of life is very low with mean 19.62 and SD 3.83. similar results by Wassef and et al. (2016) who found that Health Related Quality of Life in the studied hemodialysis patients was relatively low. [24]

The finding shows there were no statistically significant relation between patients' health-related quality of life and their sociodemographic characteristics regarding (Age, level of education, and residence). On the other hand there were statistical significant relations between demographic characteristics and patients QoL domains, relation in which gender, marital status, occupation, monthly income and number of dialysis sessions in week of the studied patients presented significant relation with their total quality of life within p value = .05 or higher. Elsodany , Abdelhamed ,and Adam(2022) indicated that a highly statically significant relation between gender and occupation of studied patients and their total quality of life in their study that carried out to assess quality of life for patients with haemodialysis in hemodialysis unit at menoufya university hospital / Egypt. [32]

A study not agree with the current study results conducted in Vietnam by Doan, et al. (2020) to investigate healthcare costs, health related quality of life, kidney disease quality of life for hemodialysis patients, who found there is associated factors of health related quality of life were age, residence area. [33]

Conclusions:

Based on the finding of the current study, it was concluded that, HRQOL of hemodialysis patients is impaired. The most important sociodemographic factors relating to HRQOL were gender, marital status, occupation, monthly income and number of dialysis sessions in week of the studied patients.

Recommendations:

This study revealed that ESRD is a major public health problem that disturbs patients' health related quality of life. So, comprehensive programs, including a health education program are recommended and interventional studies for CKD patients to improve their HQoL and to measure the health changes for that patient to ensure that the intervetion will be helpful

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