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Quality of life among patients with chronic renal failure on hemodialysis at the military hospital in southern region of Saudi Arabia

Keywords: kidney transplantation, general population, social relationship, quality initiative, psychological state, personal beliefs

Abbreviations: ESRD, end-stage renal disease; KDOQI, kidney disease outcomes quality initiative; QoL, quality of life; ANOVA, analysis of variance; PCS, physical functioning; MCS, mental functioning

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Background

End-stage renal disease (ESRD) is defined as a progressive and irreversible loss in kidney function over a long period (months-years) and sufficiently severe to require maintenance dialysis or kidney transplantation to maintain health of life.[1] Advances in dialysis treatment have contributed to improved survival of patients with end-stage renal disease (ESRD). However, despite improvements in the treatment of ESRD, the level of quality of life (QoL) is much lower for these patients than for the general population.[2,3]

By the end of 2012, there were 12844 patients on dialysis in the Kingdom of Saudi Arabia and expected to rise to 18218 in 2020. There are 182 dialysis centers all over the Kingdom. Of the 12844 patients on hemodialysis, 65% were treated by MOH hospitals, 12% by governmental non-MOH hospitals and 23% by private sector. Approximately 54.8% were males and 88.3% were Saudis.[4] Several studies have been conducted on quality of life of CKD patients on hemodialysis; however, there are only few published studies in the Kingdom of Saudi Arabia. We plan to carry this study so as to find about quality of life of chronic kidney disease patients on hemodialysis and to assess their life style and social relationship.

ESRD imposes substantial effects on the patient's QoL by negatively affecting their financial, social, and psychological well-being.[5] The disease also can have impact on patient's overall QoL and other domains like physical, functional, social and mental status.[6,7] Previous relevant research compared both modalities as well showed that patients undergoing hemodialysis or peritoneal dialysis treatment were found to experience QoL deficits.[8] According to Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines, there are five stages of CKD based on the glomerular filtration rate. In stage 5 (GFR <15ml/min), which is defined as end stage renal disease (ESRD) there is total or near-total loss of kidney function which leads to poor life expectancy.[9] All individuals who reach this stage need renal replacement therapy such as hemodialysis, peritoneal dialysis and renal transplantation as a substitute for the function of their original kidneys. Different renal replacement therapies have different levels of impact on physical, psychological and social health. Quality of life (QoL) as perceived by patients with end stage renal disease is an important measure of patient outcome. WHO has defined QOL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features in their environment.[10]

Thus, we need an approach to treat hemodialysis patients involving both nephrologists and psychiatrists as part of a multi-disciplinary team to improve their quality of life effectively.[11] In this study, the QoL is evaluated in hemodialysis patients with reference to their physical, psychological, social, and environmental health dimensions. Also, factors associated with QoL among ESRD patients on hemodialysis are determined. This study investigate the overall and different aspects of quality of life of CKD patients on hemodialysis and to evaluate their lifestyle and social relationship.

Materials and methods

Subjects

This cross-sectional study was performed on 164 patients on hemodialysis. The study was conducted at the nephrology center, King Fahd Military hospital, Southern Region in Khamis Mushait city. The ESRD patients included in this study were20 years and above of both sex and on regular three times per week hemodialysis for at least three months. The study excluded patients with malignancies or multiple organ system failure (liver disease- heart disease- COPD- stroke), and Patients on regular hemodialysis but for less than three months.

Regular hemodialysis for at least three months before patient recruitment in the study was chosen since QoL measurements are less likely to be influenced by metabolic instability and the mode of dialysis treatment after three months of maintenance hemodialysis.

The Researcher fulfilled all the required official approvals. The study proposal was approved by the regional Research and Ethics Committee, King Fahd military hospital Khamis Mushait. Informed consent was asked from all patients and all participants had the right

not to participate in the study. The researcher explained the purpose to all respondents. Confidentiality and privacy was guaranteed for all participants.

Data collection

Data collected using a questionnaire composed of two main parts: The first part included patient`s demographics (age, gender, nationality, marital status, living status. education, employment status), co-morbid history of sleep disturbance, current smoking, regular exercise, and duration of dialysis. The second part included the Kidney Disease Quality of Life scale (KDQOL-SF-1.3).[12] Its validated Arabic version was utilized.[13] The KDQoL scale is disease-targeted and focuses on particular health-related concerns of individuals with kidney disease, patients on dialysis, and the effects of the kidney disease on daily life, the burden of kidney disease, work status, cognitive function, and quality of social interaction, sexual function, social support, dialysis staff encouragement, and patient satisfaction. Its 36 items are categorized into six domains: general health, physical, emotional, social status, illness impact, and financial and medical satisfaction.[14] The scoring of the tool responses was done according to the guidelines of the KDQOL-SF 12.By using Epi-info software, version 7, putting into consideration that the expected proportion of outcome is 50% as rate of poor quality of life among hemodialysis patients, the worst accepted proportion is ±5% and the level of confidence is 95%, sample size was estimated to be 164. This sample size constituted almost 56% of the patients registered in the nephrology center, King Fahd military hospital, Khamis Mushait.

Statistical analysis

The data was collected and verified by hand then coded before computerized data entry. The Statistical Package for Social Sciences (SPSS) software version 22.0 used for data entry and analysis. Descriptive statistics (e.g. number, percentage, mean, range, standard deviation) and analytic statistics using chi-square "$\chi 2$" will be applied. The one-way analysis of variance (ANOVA) or Kruskall-Wallis tests for skewed data was utilized to compare continuous variables between more than two independent groups while the Student's t-test or the Mann-Whitney test for skewed data was applied for comparisons between two groups. Pearson correlation was used to assess the relationship between quality of life and continuous variables (e.g., age, duration). Following univariate analysis, all demographic and clinical variables with $P \leq 0.05$ were entered as predictor variables in multiple regression models. P-values ≤ 0.05 was considered as statistically significant.

Results

The present study was conducted on 164 patients, 84(51.2%) of them were males whereas 80(48.8%) were females, a questionnaire of 45 questions to investigate quality of life of patients and demographics. There were 52(31.7%) filled the survey alone, 60(36.6%), 44(26.8%) and8 (4.9%) needed help of a family member or a friend, a physician or other health care provider and someone else respectively. The age range of participants was 20-93 years old with a mean of 58±17. There were 119 (72.6%) were married while 45(27.4%) weren't.

Most of patients were living with others 157(95.7%) and weren't working 151(92.1%) while only 7(4.3%) were living alone and 13(7.9%) were working. The annual income for large majority of participants 49(29.9%) was less than 20.000 Saudi Riyal (SR), 19(11.6%),11(6.7%), 6(3.7%), 9(5.5%) and 6(3.7%) their annual salaries were 20.000-40.000 SR, 40.000-80.000 SR, 80.000-150.000SR, 150.000-300.00SR and more than 300.00 SR respectively, while 64(39%) said that they didn't know. There were 163 (99.4%) Saudi individuals, whereas 1(0.6%) only was African or black American. Large number of participants 140(85.4%) did not smoke, while 20(12.2%) were ex-smokers and 4(2.4) were smoking. Around half of patients 77 (47%) had diabetes and the majority had hypertension 118 (72.4%), Close percent were found to suffer from sleep complaint (48.8%) and the rest (51.2%) didn't suffer from sleep complaint. there were 127(77.4%) didn't exercise daily, while 37(22.6%) performed physical activities; Table 1 summarizes the characteristics of patients. The range of duration of blood dialysis was 5-264 months with a mean of 52±50.

Table 1 Characteristics of patients

Characteristics	N	%
Sex		
Male	84	51.2
Female	80	48.8
Filling the survey		
Alone	52	31.7
Need help of family member	60	36.6
Need help of physician	44	26.8
Need help of someone else	8	9.4
Marital status		
Married	119	72.6
Not married	45	27.4
Living		
With others	157	95.7
Alone	7	4.3
Working		
Yes	13	7.9
No	151	92.1
Annual income		
less than 20.000SR	49	29.9
20.000-40.000 SR	19	11.6
40.000-80.000 SR	11	6.7
80.000-150.000SR	6	3.7
150.000-300.00SR	9	5.5
more than 300.00 SR	6	3.7
I don't know	64	39
Nationality		
Saudi	163	99.4
African	1	0.6
Smoking		
Yes	4	2.4
No	140	85.4
Ex-smoker	20	12.2

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Table Continues...

Characteristics	N	%
Diseases		
Diabetes	77	47
Hypertension	118	72.4
Sleep complaint		
Yes	80	48.8
No	84	51.2
Physical activity		
Yes	37	22.6
No	127	77.4

There was a question (Q22) to investigate the overall health of patients, it was found that there was a weak correlation between overall health of patients and the sleep of patients (r=0.471, P-value<0.001), a weak negative correlation existed between overall health of patients and age(r=-0.159, P-value=0.042) and there was a weak negative correlation existed between overall health of patients and duration of dialysis (r=-0.159, P value=0.042).

There was a significant difference between overall health of patients and health state of patients in the last 30 days (P-value=0.009), also there was a significance was found regarding overall health status of patients and living alone or with someone (P-value=0.006). Regarding overall health of patients, there was a significant difference between working patients and those who didn't work (P-value=0.02), also there was a significant difference in overall feeling health for patients regarding suffering from sleep complaint (P-value=0.054) and regarding performing physical activity daily (P-value<0.001).

The QOL investigated by KDQOL questionnaire depending on 5 subscales; symptoms and problems, effects of the kidney disease, burden of the kidney disease, physical functioning and mental functioning. The percents of patients scored less than 50 in each sub scale are shown in Figure 1.The mean of symptoms and problems (S) was 74 with a range of 12.5-100, whereas that of effects of the kidney disease (E) was 56.5 for mean and 0-100 for range, 31.5 and 0-100 for mean and range of burden of the kidney disease (C), 37.4 and 12.32-64 for mean and range of SF-12 physical functioning (PCS) and 43.5 and 15.8-67.64 for mean and range of SF-12 mental functioning (MCS).

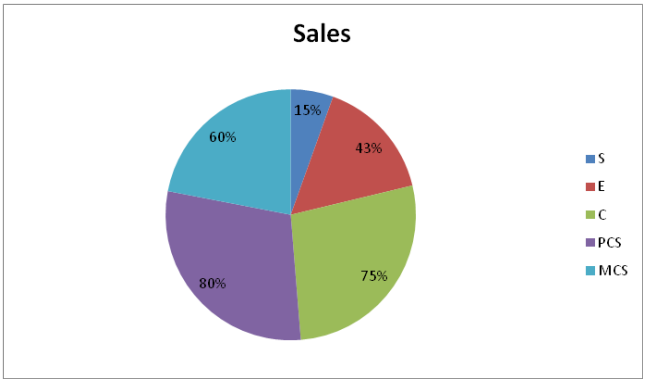

Figure 1 Quality of life subscales and percent of patients.

Discussion

The present study, included 164 patients with similar percent for both groups, male 51.2% and female 48.8%. Regarding overall health of patients, there was a weak positive correlation between overall health of patients and sleep, the overall health and quality of life of patients increase by increasing hours of sleep, those who sleep inadequate hours suffer less quality of life.

There was a weak negative correlation between Qol of patients and age, this means that overall health of patients decreases with increasing age and hence decrease in quality of life. This was in agreement with a study by Guerra-Guerrero et al.[15] who reported a negative correlation between age and all subscales assessed, except in the effects of the Kidney disease.

Also, in this study a weak negative correlation was found between overall health of patients and duration of dialysis (r=-0.159), this indicated that increasing the duration of dialysis results in decrease overall health and overall quality of life, so early diagnosis is very important to avoid the need for long duration of dialysis. In a Saudi study,[16] it was found that there was a negative association between QoL and the duration of dialysis, the same findings were reported by Ginieri-Coccossis et al.[17] who revealed that demonstrated decrease in QoL in patients who have been on dialysis for long time. Our findings supports the previous findings, whereas the opposite findings were demonstrated by another study,[18] where it was found that there was no change in QoL over time, there was even improvement in QoL over time. However, this opposite results can be attributed to other study design, other inclusion and exclusion criteria and shorter duration of study.

The current study showed that there was a significant difference(P-value=0.006) between overall health of patients and living alone or with other, most of patients lived with others, it was indicated that living alone was an independent predictor for the mental health component improvements overtime.[19] There was a significant difference (P-value=0.02) in overall health of patients regarding working. Exercise affects overall health of patients and quality of life, there was a significant difference in overall health of patients and quality of life regarding performing exercise daily (P-value<0.001), the daily exercise has good impact in quality of life of patients. Regarding Qol, the reference value was 50 points, there were high percentage of patients in three categories scored less than 50 points.

The KDQOL questionnaire that was used for investigating QOL depended on 5 subscales including burden of the kidney disease. Regarding burden of kidney disease, there were 75% of patients had scores less than 50 points, according to physical functioning there were 80 % of patients scored less than 50 points and 60% of patients scored less than 50 points regarding mental functioning. This agreed with a previous study,[15] where there were 76% of patients scored less than 50 points regarding burden of disease and regarding both physical and mental functioning subscales more than 50% scored less than 50 points for each subscale. Shrestha et al.[20] demonstrated that physical health was the most severely affected domain of KDQOL, where the mean score was 33.36, this is close to our findings where the mean score for physical functioning was 37.4, however the mean score of burden of kidney disease was lower 31.5 than that of physical functioning, this indicates that burden of kidney disease was the most affected domain.

The mean score of physical functioning of our study was lower than that of a previous Saudi study,[16] where it was reported that the mean score of physical functioning was 53.1. The mean score of physical functioning was less than that of mental functioning, this agreed with previous other studies.[15,21–23] These findings showed that the ability of patients to physically adapt to their situation over the time. The

scored mean score of physical functioning (37.4) was lower than that of mental functioning (43.5), this was in agree mental with other previous studies.[21–23] This can be explained by the ability of patients to psychologically adapt over time with their situation. In the present study regarding symptoms and problems, low percent of participants scored less than 50 points, a similar result was reported in a previous study,[15] regarding symptoms and problems subscale. The current study revealed that less than half of participants scored less than 50 points regarding effects of kidney diseases, the same was reported by Guerra-Guerrero et al.[15] This similarity in results can be attributed to the use of the same questionnaire and similar study design.

Recommendations

Further observational and interventional studies regarding improving quality of life are required for better patient-centered care.

Conclusion

Quality of life was affected by several factors including sleep hours, age, duration of dialysis, performing exercise and living alone or with someone. Quality of life decreased regarding three parameters; Burden of the Kidney disease, Physical Functioning and Mental Functioning.

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Contributorship statement

Main author did the proposal writing and data analysis contracting and follow up, while the second author did validation for the tool and administrative follow up and did final manuscript writing and submission. Both author did for data collection procedure.

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Competing interests

The authors have no competing interests to declare.

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