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# Factors Affecting Quality of Life in Patients with End Stage of Renal Disease on Hemodialysis , Ras Al Khaimah-United Arab Emirates

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**Abstract:**
**Background**: Nowadays, a dramatically increase on the incidence and prevalence of End Stage Renal Disease (ESRD) were more than one million ESRD suffer worldwide, thus, ESRD is an important public health concern for it has considerable repercussion on the quality of life (QoL) of patients and the community's increased social and health care needs.
**Purposes**: Were to describe the quality of life in patients with end stage of renal disease on hemodialysis and to examine the contributing factors that may affect quality of life.
**Methodology**: A cross sectional design was used to describe the QoL in patients with ESRD on hemodialysis and to determine the contributing factors that may affect quality of life; and a correlational design was utilized to examine associations among the independent variables (demographic characteristics and biological factors) that may influence the dependent variable (QoL).
**Setting of the study:** It was at dialysis unit located in Ibrahim Bin Hamad Obaidulla Hospital (IBHOH), affiliated to the Ministry of Health , Medical District in Ras Al-Khaimah Emirate - UAE which provided the medical services to all patients regularly attending the in-patient hemodialysis (Emirates citizens and Non- Emirates citizens) and were managed by medical and paramedical staff working within the same hospital.
**Sampling**: A purposive sampling was conducted and the accessible population was comprised of 129 regular patients. Out of 129 patients, 74 patients were qualified in the inclusion criteria to participate in the research. Participants were interviewed individually to measure Health Related Quality of Life (HRQoL) using Kidney Disease Quality of Life-36$^{TM}$ (KDQoL 36$^{TM}$) scale and compared KDQoL scores by demographic factors, and biological factors. R**esults**: the overall quality of life of patients with ESRD on hemodialysis was low, with M$\pm$SD(39.57$\pm$16.13). Increase poor quality was independently associated with female gender, aged >60 years, low educational level, unemployment status have poor QoL. The Physical Component Summary (PCS) domain came in the first rank with the lowest rated and scored with M$\pm$SD (32.66$\pm$17.30), whereas the mean of the Burden of Kidney Disease domain came in second rank with M$\pm$SD (34.61$\pm$12.26). Meanwhile, the Symptoms and Problems domain came in third rank with M$\pm$SD (38.56$\pm$22.8), followed by the Effects of Kidney Disease on Daily Life domain that came in fourth rank with M$\pm$SD (42.22$\pm$10.56), and then lastly, Mental Component Summary (MCS) domain came in fifth rank with M$\pm$SD (49.84$\pm$17.73). In this study, the results revealed that the level of serum albumin and gender were the most significant predictors that influence QoL in patients with (ESRD) undergoing hemodialysis at (P$\geq$0.05). **Conclusion and Recommendation:** The results of the present study shown the evidence that patients with ESRD have poor QoL. Lowest score of KDQoL 36TM scale was found in the "PCS , while highest score was MCS. Furthermore , the study revealed that level of the serum albumin was the most significant predictor influence QoL in patients with ESRD and the most modifiable factor which has a strong association with poorer HRQoL was education, whereas non-modifiable factor was female gender. Because of those factors attention should be given to the nurses and other health care providers as formal caregivers for early interventions that prevent further morbidity and minimize the mortality as well as provide the evidence-based for clinical practice that assist the nurses to have a comprehensive assessment of their patients' lives and integrated all these crucial aspects in inclusive plan for appropriate nursing intervention and improve quality of patient's life and HRQoL.
**Keywords** : End stage renal disease, hemodialysis, Quality of life

## 1. Introduction

Regardless of the openness of the development treatment modalities of patients with Chronic Kidney Disease (CKD) and End Stage Renal Disease (ESRD), still there are worldwide public health issues due to dramatically expanded on the frequency and pervasiveness of End Stage Renal Disease (ESRD) over the previous decade. As reported by the United States Renal Data System (USRDS,2003), the extent of the pervasive ESRD population in the United States about multiplied amid the 1990s, expanding from (196,000) in 1991 to (382,000) in 2000. The quantity of occurrence cases additionally expanded extensively amid the same period, from 53,000 to 93,000 every year. [(1)] A late USRDS projection of the development in the ESRD populations through 2010 demonstrated a close multiplying of this populations to 650,000 people, with 520,000 predominant on dialysis and more than 100,000 extra individuals are diagnosed to have ESRD. [(2,3)] According to Markov model which anticipated by 2015 there will be 136,166 episode ESRD patients for each year (lower/furthest constrains 110,989 to 164,550), 712,290 common patients (595,046 to 842,761), and 107,760 ESRD passing every year (96,068 to 118,220). Rate and pervasiveness numbers are relied upon to increment by 44 and 85%, individually, from 2000 to 2015 and frequency and predominance rates per million population (PMP) by (32 and 70% respectively). [(4)]

 

In addition, the Arab Society of Nephrology and Renal Transplantation (ASNRT,1992) disclosed that the incidence of (ESRD) is ranged between 34 and 200 patients per million per year and the average incidence of (CKD- stage 5) in developing countries is 150 patients per million of population (PMP). Hence, it is predicted that the diagnosis for new cases of ESRD will be around 20,000 every year. [5,6] Additionally, there are about 32,366 registered patients with ESRD among 16 Arab countries. [7,8] Meanwhile the prevalence rate of ESRD in United Arab Emirates (UAE) is estimated to be 74 (PMP), while if one considers all patients with severe chronic renal failure (Creatinine clearance between 10 to 25 ml/ min), the incidence will be higher at about 120 patients PMP which is much less compared to USA wherever the prevalence rate increased from (1150) patient per PMP in 1995 to (1998) PMP in 2007. [9,10]

ESRD treatment expenditure in developed countries accounted for 2-3% of total healthcare expenditure, while ESRD patients represent only 0.02-0.03% of the total population. [11] Total Medicare spending in 2010 reached $522.8 billion (+6.5% versus previous year). The United States Renal Data System reported for 2012 $32.9 billion expenditure for ESRD (+8% versus previous year). 38% of this amount was spent on inpatient services, 34% for outpatient care, 21% for physician/supplier costs, and 7.2% on Part D prescription drugs. [12]

In the other countries, the cost each person with ESRD uses approximately US$ 7332 in Brazil, [13] US$ 7500 in China, [14] US$ 5000 in India [15] and US$ 6240 in Indonesia. [16] Similarly, in the GCC countries, the growing incidence of ESRD is increasing the use of Renal Replacement Therapy, these in turn increase healthcare expenditures, placing healthcare system on a heavy financial burden. [17,18]

Several studies shown the underlying causes that influence the status of the patients with CKD and ESRD are the very high risk groups who include those with diabetic nephropathy, hypertension and a family history of kidney, in addition the global demographic transition of ageing population that has resulted in a longer life expectancy all over the world,
this means that an increasing number of people are likely to live longer with chronic health conditions that causing a high level of disability in different domains of the patients' life and also leading to a long-term medical interventions to maintain life.[4,19,20] In the western society, about 17% of persons on the kidney transplant list in 2004 actually received a kidney (USRDS, 2006). Thus, the majority of persons with ESRD require some type of dialysis to maintain life. Of those on dialysis, 93% receive hemodialysis, and 7% receive peritoneal dialysis (USRDS, 2006). While in Arab countries, 87% received hemodialysis and 13% received peritoneal dialysis. [21]

Despite of treatment of dialysis as life-saving and life-changing, nevertheless it disturbed and changed in their health status and lifestyle (Al-Arabi, 2006). [22] These changes may be considered transitions in the illness trajectory. Several transitions experienced by patients have the potential to affect their personal and social trajectories such as work, travel, and family. Patients must adhere to prescriptive and restrictive dietary guidelines, limiting the amount of fluid, phosphorus, potassium, sodium, and protein in their diets (Daugirdas et al., 2001). [23] In addition , long-term treatment of patients with ESRD leading to those patients on dialysis suffer from a number of distressing symptoms, including bodily pain, poor mental health, fatigue, sleep disturbance and pruritus, which often results in a loss of freedom, more dependence on caregivers, disruption of marital , family ,and socioeconomic life (Hudson and Johnson, 2004). [24] Since these complications occurred, a negative influence on their health-related quality of life and the majority of them result in more frequent hospitalization and increased risk of morbidity and mortality.

Based on many research findings stated in various ways that quality of life or health-related quality of life (HRQoL) is a patient's subjective sense of well-being. [25,26,27,28] Therefore , the nurse can play a vital role in monitoring quality of life in persons with ESRD, and identifying the influencing factors, that may assist in determining the ways of its improvement in QoL of the ESRD patients, avoid adverse outcomes, evaluate responsiveness and effectiveness of the treatment and risk stratification of death and hospitalization. [29,30] In extensive a review of ESRD quality of life studies, reported that a wide range of instruments have been used to measure quality of life and health-related quality of life in this population, such as the Quality of Life Index Dialysis ,WHOQOL-100 and the WHOQOL-BREF questionnaire. While in the current study, the Kidney Disease Quality of Life scale (KDQoL-36 $^{TM}$) was used to take into account particular concerns of patients with kidney diseases and ESRD to measure HRQoL. This KDQoL-36 $^{TM}$ scale is included five subscales: Physical Health Component Summary (PCS), Mental Health Component Summary (MCS), Burden of kidney disease, Symptoms and problems, and Effects of kidney disease on daily life subscales. [31,32,33]
In addition, this study has been used a revised version of Wilson and Cleary's (1995) model as an approach to guide and clarify the factors and to measures HRQoL that may affect QoL. According to this model, there are four main determinants of overall quality of life:(1)Biological function, (2)Symptoms, (3)Functional status and (4)General health perceptions. The revised model also clarifies more components including characteristics of the individual and characteristics of the environment which influence all of these determinants of quality of life.[34,35] . To improve the HRQoL among patients with ESRD on hemodialysis, it is important to determine those factors that contribute to their poor quality of life. [36,37,38]

 

### 1.1. Significance of the Study

As a report presented at the 40th annual meeting of the American Society of Nephrology (2004), it is predicted that by 2020, the number of patients with ESRD will increase to nearly 60% in comparison to that of 2005. In the other hand, incidence and prevalence of ESRD From 2000 to 2015 are predicted to increase by 44 and 85%, respectively, and incidence and prevalence rates per million population will increase by 32 and 70%, correspondingly. [39] Similarly, there have been marked rises in the prevalence and incidence of ESRD in UAE where the annual incidence of end-stage renal disease (ESRD) in Abu Dhabi, UAE, is estimated to be 74 -120 patients PMP. This is approximately the same as reported 80 to 120 per million population (PMP) in the Kingdom of Saudi Arabia and 225 PMP in Egypt. This is in comparison with the reported prevalence of 283 PMP in Europe, 975 PMP in the United States, and 1149 PMP in Japan. [40, 41, 42] These increases in incidence and prevalence of ESRD all over the world will substantially increases the numbers of patients with ESRD who face many challenges due to their condition which may leave them feeling fatigued, and anxious as well as loss in their body image, and financial burden.

Information consolidated from 150 countries worldwide showed a number of patients being treated globally for ESRD of 3,010,000 at the end of 2012 and the number of patients is growing faster than the world population (growth rate: 7%). At the end of 2012, hemodialysis (HD) was still the most common treatment modality, with approximately 2,106,000 patients (89% of all dialysis patients) and around 252,000 patients undergoing peritoneal dialysis (PD) (11% of all dialysis patients). At European level, the average growth rate of the dialysis patient population between 2011 and 2012 was about 2%. [43]

In several studies have shown that patients with ESRD on hemodialysis have a poor health-related quality of life and present with many complications such as depression, malnutrition, and inflammation and suffer from impaired cognitive functioning like memory loss and low concentration. 7 Further, They experience troubling symptoms such as sleep disturbances, pruritus, muscle cramps, restless legs, bone and joint pain , many do not feel well enough to work long hours performing physical labor (50 % of new patients each year are working age) and limited survival with poor quality of life. [43,44,45,46,47] Additionally, World Health Organization (WHO), performed an estimation on the Global Burden of Disease (GBD) for years 2000–2011, indicated that kidney diseases were responsible for 815,000 deaths (1.5% of the total number of global deaths [48] and for 28,698,000 disability adjusted life years (DALYs) lost, corresponding to 1% of all global DALYs lost in 2011. [49]

Hence, the aim of the patients' treatment at present is not only life-saving but also to provide a better quality of life (QoL). To attain this aim, the health care providers must realize that there are numerous contributing factors which have already been related to a decline in Health-Related Quality of Life (HRQoL) in such a particular group. Therefore, the consensus among researchers is that quality of life measurement should focus on the subjective experiences of the individual and assess the HRQoL of dialysis patients and dialysis related factors affecting it, that may assist the health care providers to have a comprehensive assessment of their patients' lives and integrated all these crucial aspects in inclusive plan for appropriate nursing intervention and improve quality of patient's life. Other approach to enhance quality of life for hemodialysis patients is to comprehension the view of the contributing factors which interfere with quality of life that may help the nurse as a health care profession to distinguish which interventions could have the most impact on overall quality of life. [50,51]

### 1.2. Statement of the problem:

In Abu Dhabi-UAE and the other emirates, the true incidence of patients with end-stage renal disease (ESRD) could be underestimation, due to difficulties that exist in screening the true population of the Emirates as well as other factors such as poor referral or missed cases by medical practitioners. [41,42]. Therefore, all emirates in UAE need more researches in this area. Due to lack of literature on the quality of life in patients with ESRD in United Arab Emirates , this study sought to describe the quality of life in patients with end stage of renal disease on hemodialysis and examined the contributing factors that may affect quality of life, hence the study findings will add more information and increase the database regarding persons with ESRD and their quality of life in UAE and also utilize the findings of this study as an evidence for improving clinical care practice and assisting health care system to develop public policy which provide more support to patients with ESRD and their families.

## 2. The purposes of this study:

The purposes of this study were to describe the quality of life in patients with end stage of renal disease on hemodialysis and to examine the contributing factors that may affect quality of life.

To achieve the purposes, the following research questions were developed:

**Q1**: What is the quality of life of patients with ESRD on hemodialysis?

**Q2**: Is there a significant relationship between socio-demographic characteristics and overall quality of life and five domains of QoL of patients on hemodialysis?

**Q3**: Is there a significant relationship between biological factors and overall quality of life and five domains of QoL of patients on hemodialysis?

**Q4**: What is the strongest predictor that may influence the quality of life of patients with ESRD on hemodialysis?

## 3. Materials and Methods

**3.1. Research designs:** A cross sectional design was used to describe the status of the current level of quality of life, and factors that may affect their quality of life; and a correlational design was utilized to examine associations among the independent variables (socio-demographic data and biological factors) that could be logistically manipulated and may influence the dependent variable (QoL). Research setting was at dialysis unit located in Ibrahim Bin Hamad Obaidulla Hospital (IBHOH), affiliated to the Ministry of Health, Medical District in Ras Al-Khaimah Emirate - UAE which is provided the medical services to all patients regularly attending the in-patient hemodialysis (Emirates citizens and Non-Emirates citizens) and were managed by medical and paramedical staff who are working in the same hospital.

### 3.2. Study sample

A purposive sampling was conducted and the accessible population was comprised of 129 regular patients. Out of 129 patients, 74 patients were qualified in the inclusion criteria to participate in the research. Inclusion Criteria were persons actively undergoing in-center hemodialysis, on hemodialysis for at least three months, 18 years of age or older, and able to speak and understand the Arabic or English language. Exclusion criteria were patients under age 18, those who cannot complete the KDQoL-36™ due to cognitive impairment, dementia, active psychosis, non-Arabic or non-English speakers and readers, patients on dialysis less than 3 months, and patients who refuse to participate in the study.

### 3.3. Data Collection Instruments

An interview questionnaire form was prepared and included two instruments used to collect data. The first was concerned with Socio-demographic characteristics and the second was related to The Kidney Disease Quality of Life (The KDQOL-36™) English and Arabic forms, Version (1), 2000 . [17,18]

### 3.4. Measurements of the study variables

**3.4.1 Independent variables** which included **Part (1) Socio-demographic data** such as age, gender, nationality, level of education, employment status, living status and financial support . **Part (2) Biological factors** such as the recent serum albumin & serum hemoglobin levels, and comorbidity prior to dialysis, adherence to medication, duration of dialysis, number of hours per session, number of sessions per week.

**3.4.2 Dependent variables** comprised of the Kidney Disease Quality of Life (KDQoL-36™) that used the SF-12 (a short version of the SF -36) and 24 kidney disease specific questions. The KDQoL-36™) is a reliable and valid 36-items HRQoL survey with five subscales as follows:

- SF—12: Physical Component Summary (PCS) Subscale (Questions 1-12)
- SF—12: Mental Component Summary (MCS) Subscale (Questions 1-12)

  Both scales include items about general health, activity limits, ability to accomplish desired tasks, pain, depression and anxiety, energy level, and social activities.
- Burden of Kidney Disease Subscale(Questions 13-16),includes items about how much kidney disease interferes with daily life, takes up time, causes frustration, or makes the respondent feel like a burden.
- Symptoms and Problems Subscale (Questions 17-28), includes items about how bothered a respondent feels by sore muscles, chest pain, cramps, itchy or dry skin, shortness of breath, faintness/dizziness, lack of appetite, feeling washed out or drained, numbness in the hands or feet, nausea, or problems with dialysis access.
- Effects of Kidney Disease on Daily Life Subscale (Questions 29-36) includes items about how bothered the respondent feels by fluid limits, diet restrictions, ability to work around the house or travel, feeling dependent on doctors and other medical staff, stress or worries, sex life, and personal appearance.

### 3.5. Scoring and Interpretation

In the present study, The Kidney Disease Quality of Life (The KDQOL-36™) version (1) was used to measure HRQoL. This instrument consists of 36 items, divided in two components: generic and disease related cores. The results of generic core reported by two components Physical Component Summary (PCS) and Mental Component Summary (MCS) (questions 1-12), while disease related core that are comprised of the three subscales of the SF-36: Burden of Kidney Disease (questions 13-16), Symptoms and Problems (questions 17-28) and Effects of Kidney Disease on Daily Life (questions 29-36). Item scores ranged from 0 to 100, with 0 indicating the worst and 100 the best quality of life, average score for each subscale was 50. Individual, environmental and biological factors were collected on a questionnaire form, based on the medical records for each patients, dialysis files, and database at the dialysis unit. The scoring of the different subscale was calculated according to the guidelines of the KDQOL-36™ scoring program. [17,18]

### 3.6. Reliability and Validity of The KDQOL-36™

Internal consistency reliability was estimated using Cronbach's alpha for each subscale of the KDQOL-36™. A Cronbach's alpha was 0.7 for all items that considered high internal consistency ranging from (0.70) to (0.82). In other several study, internal consistency for all the subscales was ranging from 0.80 to 0.87. [21] The percentage of respondents with scores at the upper "ceiling" (score of 100) and lower "floor" (score of zero) were calculated for each scale

### 3.7. Data analysis:

Data analysis was performed by SPSS software (Statistical Package for the Social Sciences, version 20 SPSS Inc, Chicago, Illinois, USA). Descriptive analysis represents the calculated frequency, mean, and standard deviation for the dependent and independent variables. Bivariate statistics was used to estimate mean, standards deviations of the overall QoL and rank of five subscales of QoL in patients on hemodialysis. One-way ANOVA test was used to compare the means and standard deviations of the five subscales of QoL in the patients with ESRD on hemodialysis according to their socio-demographic

characteristics which included (individual and environmental data) and biological data. All variables were entered simultaneously into a multiple regression model to determine the strongest predictor that may influence the quality of life of patients with ESRD on hemodialysis. A P-value of .05 or less was considered as statistically significant differences.

### 3.8. Pilot study

Ten patients were selected for the pilot study (five patients were speaking Arabic and five patients were speaking English), they are enrolled patients' list of the dialysis unit which is located in Ibrahim Bin Hamad Obaidulla Hospital (IBHOH), Ras Al-Khaimah, UAE. The last for the data collection was one week (8th April, 2013 to 15th April, 2013) to assess the feasibility of the study and clarity of the questionnaire . The researcher found that the study was feasible within the time frame allotted by the in-charge nurse and the time was taken approximately 20 - 30 minutes to fulfill the questionnaire.

### 3.9. Ethical consideration:

This study was conducted with approval of the Ethical and Research committee of RAK Medical and Health Sciences University, UAE. Investigators collected written informed consent from the participants after explaining the purposes and procedures of the research to all the participants and their caregivers. Also investigators clarified the potential risks and benefits associated with their participation and the right of withdrawal from the research without penalty, and the confidentiality of the data.

### 3.10. Limitations:

There are certain limitations of this study . Firstly , the sample size taken in this was very small that is only 74 . Secondly, during the data collection, some patients are suffered from a dramatic swings in their blood pressure and electrolytes pre-dialysis session so they can't be able to answer the questions related to their health, while some of them also are missed their dialysis session as scheduled because their feel travelling to and from dialysis unit three times per week was difficult , therefore the researcher reschedule another time with the in-charge nurse of the dialysis unit for data collection.

## 4. Results:

### 4.1. Internal Reliability of Five Domains of the KDQoL-36 TM scale

All data were entered into SPSS version (20). Five subscales of The Kidney Disease Quality of Life The KDQOL-36™ instrument were calculated to check for internal reliability using Cronbach's alpha for each subscale. Scores obtained acceptance where the internal reliability for Physical Component Summary subscale was (0.82) ; Mental Component Summary subscale was (0.86) ; Burden of kidney diseases was (0.83); symptoms and problems was (0.83); and the effects of kidney disease on daily life was (0.82) and ranged from 0.82 – 0.88 [See Table 1].

### 4.2. Socio-demographic characteristics of the study respondents

The total sample of 74 patients with ESRD on hemodialysis was measured. Socio-demographic characteristics are illustrated in table (2). Patients' age ranged from >18 years to $\geq$ 60+ years, the mean and standard deviation were 47.2 $\pm$ 12.47 years. Most of the respondents were males (64%), Emirates (70%), married (73%) and not formal educated (45%). The majority of the study sample (79.7%) un- employed. All of study sample (100 %) was living with their family and they were received a governmental financial support in the form of health insurance card that allow them to have free health services for all the types of treatment.

### 4.3. Biological data of the study respondents

Table (3) depicts the clinical variables of the study respondents with ESRD on hemodialysis. There were slightly more than half of the study sample (55.6 %) had co-morbidity or kidney diseases pre-dialysis that may be as a contributing factor for renal failure. The majority of the respondents (87.8%) were adherence of medication while 12.2 % non-compliance to medication (non-compliance i.e., skipping one or two HD sessions per month). Around half of the respondents (51.4%) had low hemoglobin below normal range ( < 8 mg/dl ) and more than two – thirds had low albumin level below normal range ( <31.9 g/dl ). Majority of the study sample (66.2 %) was spent 3 hours per session. Also most of the respondents (64.9%) had two sessions of dialysis per week, while the minority (35.1%) had three or more session per week, and the mean duration of dialysis / month (34.32 $\pm$ 26.92) i.e., majority of the study sample (75.7%) had less than 60 month that mean they had less than five years on hemodialysis therapy.

Results relating to answering the **first question** that reads, "**What is the quality of life for the ERSD patients on hemodialysis?** To answer this question, a calculation was made of the means, standard deviations and rank of the estimates of the QoL of the patients with ESRD who have participated in this study. Table 4 shows that the overall quality of life of patients with ERSD on hemodialysis was low, with mean of (39.57) and a standard deviation of (16.13). The Physical Component Summary (PCS) domain came in the first rank with the lowest rated and scored a mean of (32.66) and a standard deviation of (17.30), whereas the mean of the Burden of Kidney Disease domain came in second rank with a mean of 34.61 and a standard deviation of (12.26). Meanwhile, the Symptoms and Problems domain came in third rank with a mean of (38.56), and a standard deviation of (22.8), followed by the Effects of Kidney Disease on Daily Life domain that came in fourth rank with a mean of (42.22), and a standard deviation of (10.56), and then lastly, Mental Component Summary (MCS) domain came in fifth rank and scored a mean of (49.84), and a standard deviation of (17.73).

Results related to answering the **second question** that reads, "**Are there a significant relationship between socio-demographic characteristics and five subscales of QoL in patients on hemodialysis?"** The results in table (5) and table (6) stated the socio-demographic data as health-related factors that may influence the quality of life. Table (5) shows there are

significant associations between the socio-demographic factors & all the quality of life domains in the patients with ESRD on hemodialysis. Whereas the lower mean scores in PCS, burden of kidney disease, and symptoms & problems were associated with increasing patient's age. Also the results revealed that there is a positive association with gender, where female gender had lower mean scores of all quality of life domains comparing by male in PCS (28.64±12.07 vs. 36.68±22.53),MCS(40.80±19.98 vs. 58.88±16.51),Burden of Kidney Disease (19.54±11.14 vs. 49.68 ±13.38), Symptoms & Problems (27.67±23.07 vs. 49.45 ±22.53) , and Effects of kidney Disease on Daily life (33.82±7.67 vs. 51.62±13.45).

In addition, the results in this study shown that mean scores in PCS and MCS were increased (39.19±19.36 and 56.53±17.74 respectively ) when the level of educational was increased at significant level (P= .022, p=.05 respectively). This study results found that the employment had a significant differences in all domains of the KDQOL-36 TM. Whereas the employed patients had higher mean scores in MCS (50.60±16.69) , effects of kidney disease on daily life (51.44±10.71) , and symptoms and problems (46.22±23.19) than PCS (38.88±18.18) and burden of kidney disease (19.13±11.42) when compared to the mean scores of quality of life of unemployed individuals with ESRD. In addition, the results show insignificant differences in nationality, and marital status.

In Table (6) One-way ANOVA test was used to reveal the difference in the estimates mean score of the total quality of life in the patients with ESRD on hemodialysis according to their socio-demographic characteristics. The findings in Table (6) indicate that there are statistically significant differences in the estimates of the total score of quality of life regarding to age, gender, level of education, and employment, at the level of significant (P= .030, F=3.693; P= .040, F= 3.371; P= .027, F= 5.103; P= .007, F= 5.266 respectively). Also the results show insignificant differences in nationality and marital status.

Results related to answering the **third question** that reads, "**Is there significant relationships between biological factors and domains of QoL and overall quality of life of patients on hemodialysis?"** The results in table (7) and table (8) are stated the biological factors as health-related factors that may influence the quality of life. Table (7) shows the various biological factors and their association to the quality of life domains (PCS, MCS, burden of kidney disease, symptoms & problems and effects of kidney disease ) in the patients with ESRD on hemodialysis. The findings in Table 7 indicates that there was lower mean scores of PCS (29.06±15.44), MCS (40.58±10.60), burden of kidney disease (24.65±12.0), symptoms & problems (36.17±20.60) and effects of kidney disease on daily life (38.23±9.84) among patients who had co-morbidity pre-dialysis. Also there was a significant association between the patients with adherence of medications and mean score of better quality of life domains in the patients with ESRD on hemodialysis (PCS 35.91±17.16, MCS 62.68±14.41, burden of kidney disease 41.10±12.63, symptoms & problems 42.68±22.69 and effects of kidney disease on daily life 48.90±10.94 ). Additionally, the findings are tabulated in table 7 shows that there is a significant association between low mean scores in all quality of life domains and patients who had low serum albumin (PCS 21.49±15.32, MCS 40.53±19.79, burden of kidney disease 22.59±13.16, symptoms & problems 27.59±13.81 and effects of kidney disease on daily life 30.17±11.15 ). In addition , level of hemoglobin was highly statistically significant with the domains of QoL, except MCS was not significant . The values of significant difference were PCS (P= .000), burden of kidney disease (P=.033), symptoms & problems (P=.000) and effects of kidney disease on daily life (P= .000), MCS (P= .084). The results show also there was a significant relation between duration of dialysis (< 60- month) and low mean score of PCS(22.85±18.08), MCS(32.45±14.51), burden of kidney disease (29.20±12.86), symptoms & problems (27.45±20.65) and effects of kidney disease on daily life (30.74±17.12).

In Table (8) One-way ANOVA test was used to reveal the difference in the estimates of the total quality of life of the patients with ESRD on hemodialysis according to their biological factors. The findings in Table (8) indicate that there are statistically significant differences in the estimates of the total score of quality of life and patients who had co-morbidity pre-dialysis, adherence of medication, recent serum of albumin level, hemoglobin level and duration of analysis/month at the level of significant (P= .019, F= 5.732; P= .040, F=3.371; P= .021, F= 2.944; P= .046, F= .818; P= .044, F= 3.258 respectively). In addition, the results show insignificant differences in dialysis hours / session; and no. of dialysis sessions /week. These values are statistically significant at the level of ($P < 0.05$ , $P < 0.001$).

In this study, table (9) shows a linear regression model was used to determine the strongest predictors of QoL. After fitting the various socio-demographic characteristics and biological factors into the linear regression model. On the basis of Beta coefficients the model , the results indicate that the most significant variable contributing to low QoL was
Level of serum albumin factor (60%) negative variation in QoL of the patients with ESRD and t-value (–0.574) is significant at (P= .002). In addition, gender factor (40%) positive variation in QoL of the patients with ESRD and t-value (+3.760) is significant at (P= .003). While employment status factor (30%) positive variation in QoL of the patients with ESRD and t-value (+1.010) is significant at (P= .012). Also level of education factor (30%) negative variation in QoL of the patients with ESRD and t-value (- 3.23) is significant at (P= .001). Age factor (23%) positive variation in QoL of the patients with ESRD and t-value (+ 2.12) is significant at (P= .056). Level of hemoglobin factor (23%) variation in QoL of the patients with ESRD but in negative direction and t-value -0.808 is insignificant at (P= .09). Comorbidities pre-dialysis factor (21%) variation in QoL of the patients with ESRD in negative direction and t-value (-1.690) is significant at (P= .000). Adherence of medication factor (9% ) variation in QoL of the patients with ESRD in opposite or negative direction and t-value (-0.676) is significant at (P= .003). Lastly, duration of dialysis factor (0.1%) variation in QoL of the patients with ESRD in opposite or negative direction and t-value (-0.010) is significant at (P= .001).

**5. Discussion**

End Stage Renal Disease (ESRD) is one of the common chronic disease causing high level of disability in different domains of the patient's live, leading to impaired QoL. Therefore, the purposes of this study were to describe the quality of life in

persons with end stage renal disease and to examine the contributing factors that may affect quality of life.

**5.1. Quality of life:** In this study, the overall quality of life of patients with End Stage of Renal Diseases (ESRD) on hemodialysis was lower where mean and standard deviations for this study sample was (39.57±16.13). There is other study administered the same scale the KDQOL-36™ version (1) to persons with ESRD, this study reported the mean score of overall quality of life was average score (55.73±11.75).[52] In addition, other study conducted in Saudi Arabia and used Arabic version of Kidney Disease Quality of Life Instrument Short Form (KDQOL-SF), the results revealed that the overall mean score was (60.4).[53] There are other studies that have administered different scale "the Quality of Life Index- Dialysis (QLI-D)" to persons with ESRD. These studies reported lower quality of life scores and their mean QoL is (M = 20.70 ± 22.67). [37,54,55,56] Also one study conducted in UAE to assess quality of life in dialysis patients at Sheikh Khalifa Medical City (SKMC) in Abu Dhabi Emirate (2012), that have administered two tools to assess Quality of Life, first tool was "the Quality of Life Index- Dialysis (QLI-D) to persons with ESRD and the second tool 36-Item Short Form Health Survey (SF-36). The overall QoL for dialysis patients was rated low when self-assessed using the SF-36 (58.9) compared to QoL index (77.2).[54]

In addition, the findings in the current study reported the mean score of PCS subscale was the lowest rated (mean = 32.66, SD = 17.30) and the mean score of MCS was the highest of all the subscales (mean = 49.84, SD = 17.73). This indicates that the persons with ESRD in this study were struggling with poor physical health component that may contribute to poor overall quality of life. There is a study approached KDQOL-36™scale , version (1.3) , reported the range of PCS scores was (6.7 - 65.5) and for MCS was (7.8 - 73.5 ), these means indicate to PCS was low score compared by MCS that may contribute to poor overall quality of life.[38,53,56] In addition, other study used Arabic version of Kidney Disease Quality of Life Instrument Short Form (KDQOL-SF),the results declared that the domains with very low scores were "cognitive function", "role-emotional", "role-physical" and "work status" and the other domains with high scores were "patient satisfaction", "dialysis staff encouragement" and "quality of social interaction". The mean scores for MCS and PCS were 54.2 and 52.7 respectively.[52]

This study findings reveal that the burden of kidney disease subscale was the second rank in the lowest subscale score (M=34.61,SD=12.26) after physical component subscale score. This mean score supports the heavy disease burden felt by persons with ESRD. Due to physical component subscale mean was lower than overall quality of life mean that may place persons with ESRD to have an indirect reason for feeling of disease burden. Also the results of this study given that both symptoms & problems; and the effects of kidney disease on the daily life subscales were rated slightly high (M=38.56,SD=22.8; M=42.22,SD=10.56 respectively), these two domains may provide needed resources to cope with what would otherwise be a poorer quality of life such as family, friends, neighborhood support as well as financial support either from governmental or family or both together that may place greater attention on the non-health factors to rebalance the overall quality of life . According to Ferrans' model (1996), socioeconomic, psychological/ spiritual, and family domains are also contribute to overall quality of life , where the socioeconomic subscale was the second lowest subscale score in this study and almost a third of respondents reported that their annual household income was below the federal poverty level[56] , while in the current study all the persons with ESRD had full support financially from the government to cover all the health services that may require for their treatment completely free.

**5.2. Socio-demographic characteristics :** These are included individual and environmental factors that influence health outcomes. [34] They impact all antecedents of quality of life, thereby moderating their influence. For the proposed of this study, the individual characteristics were selected for inclusion in the study: age, gender, and nationality as important characteristics of the individual that may impact quality of life in persons with ESRD.[38,52,53]

**5.2.1. Individual characteristics** :

**A- Age:** It was continuous variable in this category and ranged widely from >18 to ≥ 60 years, with a mean age (47.2±12.47). In the present study, advanced age was a significant variable that associated with the lower quality of life in hemodialysis patients. This finding is consistent with other ESRD studies have found that increasing age is associated with a decreased quality of life. [52,55,57,58,59] In addition, Ferrans and Powers (1993) also found age had positively correlated with quality of life. However, for every 20-year increase in age, the QLI-D scores only increased by one point .[25] Conversely, other studies results given those patients' age were not associated with lower quality of life in hemodialysis patients.[37,60] In addition, Greene (2005) found that younger dialysis patients had a significantly lower quality of life than older groups of patients.[28] Therefore, the results from this study indicate that age is an important variable in understanding quality of life in persons with ESRD.

Also in the present study, the results shown that with the advanced age, the patients' mean scores of quality of life were significantly lower for all five subscales of KDQoL-36™, particularly Physical Component Summary (PCS), Effects of Kidney Disease on Daily Life and Burden of the Kidney Disease. This finding is confirms the previous findings that shown the patients' mean scores of quality of life were significantly lower for all domains of quality of life .[37,38, 57,61,62] Therefore, the findings of these earlier studies may be best understood in terms of the relationship between increasing age and quality of life.

**B- Gender**: Both genders were well represented in the study, male was more participants in the present study. In the present study, male and female had a statistically significant association with all domains of the quality of life, where the mean score

and standard deviation in PCS (36.68 ± 22.53 vs. 28.64 ± 12.07 , P= 0.052), MCS (58.88 ± 16.51 vs. 40.80 ± 19.98, P= 0.038), burden of kidney disease (49.68 ± 13.38 vs. 19.54 ± 11.14, P= 0.033), symptoms & problems (49.45± 22.53 vs. 27.67 ± 23.07, P= 0.061),and effect of the diseases on daily life (51.62 ± 13.45 vs. 33.82 ± 7.67 , P= 0.052). This finding is consistent with other ESRD studies reported that a present of significant correlation between male and female with physical function (46.1 ± 28.5 vs. 33.4 ± 30.4, P=0.01), social support (68.5 ± 28.1 vs. 77.9 ± 26.0, P=0.03) as well as sexual function (27.2 ± 39.8 vs. 7.2 ± 25.05, P< 0.001).[55] Also there are two studies found that women and men were different on various domains of quality of life. Lopes et al., (2007) found that women had significantly lower quality of life related to symptoms and problems, but higher quality of life related to social interaction and sexual function, as measured by the Kidney Disease Quality of Life (KDQoL 36$^{TM}$).[58] Similarly, one study which also used the SF-36 found that men reported a higher quality of life than women. [63]

Also in the present study shown that the female gender had a lower mean scores in all quality of life domains particular in PCS , burden of kidney disease and symptoms & problems compared by males. This finding is similar with other studies observed that the females had an average lower scores on the physical role and physical function subscales than in the males [52,54,57]. In addition, Walters et al. (2002), was used the Kidney Disease Quality of Life (KDQoL 36$^{TM}$), found that women had significantly lower quality of life related to physical functioning, pain, emotional well-being, and energy/ fatigue, but higher quality of life related to sexual function.[64] A few studies have found no differences in quality of life between men and women. [25,26,27, 37,57]

**C- Nationality:** In this study nationality was not significant variable as individual characteristics. This finding inconsistent with other studies which found that ethnicity had a significantly lower quality of life. Other studies findings found ethnicity had positively correlated with quality of life, where African American hemodialysis patients reported better health status and QoL compared with Caucasians. However, age and gender adjusted rates for African Americans are over four times the rate for Whites.[21,65] These results were found due to African American patients possess "hardiness" as part of their biological make up that is not captured by the routinely collected clinical status variables and QoL tools. Furthermore, African Americans might have greater perception of social supports compared with Caucasians patients This could promote the sense of well-being for African American patients compared with Caucasians patients.[65] Therefore, the results from the current study illustrate that may the Emirates population had social supports and health care access from their government as well as they had family support and deepening one's faith that could increase their sense of well-being compared with non –Emirates population before dialysis started.

In addition, the result in the present study shown that mental health component score was highest than all the other subscales scores. Similarly to other studies in HD patients mental health component score was higher than physical health component scores. [54,55] In contrast, other studies done on Taiwanese patients with ESRD which given that dialysis patients had higher scores in all subscales of Qol -Index except mental health component, social function and body pain. While other studies among Brazilian and Iranian's patients found that the total mean of physical health component was higher than the total score of the mental health component. According to Daria & Patricia (2008), and Ferrans & Powers (1993) found that no racial differences in quality of life ([37,25]. In this study, along with Ferrans and Powers' study, suggest that race or ethnicity is not a factor in determining overall quality of life in persons with ESRD. [25]

**5.2.2. Characteristics of the Environment:** The surrounding environment that may influences one's perception of quality of life. [35] Therefore, characteristics of the environment are important to include in quality of life research. In the present study, the characteristics of the environment have examined were marital status, educational level, employment status, financial support, and living status.

**A- Marital status:** In the present study, the results have shown that marital status was not a significant variable. However, it consistent with the work of (Abdelbasit and Kamal, 2012, Daria and Patricia, 2008, Ferrans and Powers, 1993) who also found no significant relationship between marital status and quality of life. Potential explanations for the observed may be that persons on hemodialysis receive support from their family members and others relative , and that marriage is not necessary to receive the emotional and practical benefits that such a committed relationship may impart. [54,37,25] In addition, the findings in the current study have shown no significant relationship between marital status and all five quality of life subscales. Wherever married patients had not significant differences in all QoL five subscales compared to single and widowed patients. Conversely, other studies had a significant relationship between marital status and quality of life, where married patients had a better (PCS), (MCS) and (KDCS). [55]

**B- Education**: In the present study, the results shown that education status had a statistically significant variable. This result was consistent with to a published study which reported that higher educational level patients had a better quality of life higher score only in symptoms and sexual function when compared to illiterate patients (P=0.03 and P=0.01 respectively ). While role physical score was better in illiterate individuals (29.7±33.2 vs. 25.9±31.9, P=0.03), but no significant differences were seen in other subscales.[55] In other studies, reported that most of QoL dimensions in the SF-36 increased when the educational status increased. In addition, this study revealed that lower educational level was associated with lower scores of PCS and MCS and several generic and kidney disease-target scales. [57] However, it contradictory with the work of (Abdelbasit and Kamal, 2012, Antonio et al., 2006) who also found no significant relationship between education and quality of life. [54,38]

**C- Employment:** The findings in the current study have shown that employment status was a statistically significant variable. This result is consistent with the other studies which found that there was a statistically significant relationship between employment status and quality of life, wherever the results declared that the employment status had a significant differences in the SF-36 total scores of quality of life of persons with ESRD.(54) In addition, another study showed that status of work was associated with higher QoL scores. (57) In addition, the results of the current study have shown that the employed patients had a higher mean score than un-employed patients in effects of kidney disease on daily life , and MCS than symptoms and problems, PCS , and Burden of kidney disease. Similarly in the other studies the results shown that the employed patients had higher scores in MCS, effects of kidney disease on daily life, and symptoms and problems than PCS and burden of burden of kidney disease when compared to the unemployed individuals. (38) Also one study shown that the employed patients had higher scores in emotional well-being (P=0.04), work status (P= 0.004), effect (P= 0.04) and the quality of social functioning (P=0.004) and lower score in encouragement (P= 0.04) when compared to the unemployed individuals. (55)

**5.2.3. Biological function:** Includes the physiological processes that support life and is the most fundamental determinants of health status. (34,66) Biological function focuses on the performance of cells and organ systems and can often be measured through physical assessment, medical diagnosis, and lab tests. Alterations in biological functions can impact all the subsequent determinants of quality of life.

**A- Co-morbidity**: In the present study, co-morbidity pre-dialysis was significantly contributed to quality of life in this study. This finding consistent with other studies which found that co-morbidity had been implicated in decreased QoL. (36,57, 62,67) In addition, Kalantar et al., (2001) who found that chronic illnesses as a primary kidney disease are considered important contributing factors to the clinical outcomes and QoL.(26) Another study shown that those who had another chronic illness had lower mean scores in QoL.(36,54,57) The potential explanation of this result is expected because kidney failure impacts negatively on the patient's physical, psycho-social and economic well –being. In addition, existing associated diseases, especially diabetes mellitus, are strongly related to the worst QoL scores in ESRD patients on HD.(68) The results in the present study shown that existing of co-morbidity pre-dialysis was significantly associated with lower scores of physical health component and burden of kidney disease than mean scores of mental health component , effect of kidney disease and symptoms & problems. This result was consistent with (Amir et al.,2010, Antonio et al., 2007) who found that existence of several co-morbidities were significantly associated with lower scores of physical health component and mental health component and several generic and kidney disease-target scales. (62,38)

**B- Adherence to medication:** In the current study, adherence to medication was significantly contributed to quality of life. This finding is consistent with other studies which found that the patients' mean short form-36 scores were significantly lower than those obtained for the general population.(52,69) Also adherence to medication was significantly associated with lower scores of PCS and burden of kidney disease than mean scores of MCS, effect of kidney disease and symptoms & problems in the present study. This result was consistent with other studies which found that patients with poor adherence to treatment suffered from a poorer physical health. (52,62)

**C- Duration of dialysis:** In the present study reported that patients who were on dialysis for the last (>5 years or more) was significantly associated with higher scores in all KDQoL-36TM domains particularly in MCS, and effect of kidney disease compared to the patients who with shorter duration of dialysis ( < 5 years ). This results are similar with several studies using KDQoL-36 TM and other studies using WHOQoL-BREF and health status instruments found that duration of dialysis was significantly contributed to quality of life and actually improved the longer one was on dialysis. (36, 57,60,64) While this results was inconsistent with other studies using the Quality of Life Index-Dialysis which found that duration of dialysis with the patients who were on dialysis for the last (10-12 months) did contribute significantly better QoL scores in the psychological and environmental domains than did the patients with longer than 10-12 months. (52,62) Thus instead of time on dialysis becoming a growing burden, time brings a sense of familiarity and even an extended social support system. In addition, those who have been on dialysis for a longer period of time may have had more time to adjust psychologically to their new lifestyle. (52,62,70)

**D- Number of dialysis sessions per week and Number of hours per session:** The findings in this study found that both number of dialysis sessions / week and number of hours /session were not significantly contributed to quality of life. This result was contrary with other studies which reported that mean Kt / V (the way of measuring dialysis adequacy) was 1.3±0.29 in United States and another study in Japan reported that the mean that mean Kt / V was 1.3± 0.2. However, some studies in Iran showed the that mean Kt / V was 0.97± 0.25 & 0.94 ± 0.37; while in Fars province of Iran that mean Kt / V was 0.96 ± 0.40 . This indicator was significantly higher in those who received three sessions of dialysis per week (71,72). Another reason is less frequent reason could be non-compliance of the patients that may be caused by distant residence place to dialysis centers and low socioeconomic status of some patients. In other study, the results suggest that for improving outcomes in patients on hemodialysis, promoting of their quality of life, and increasing the Kt/V should be noticed by increasing in the number of available dialysis machines and longer dialysis duration, providing a better access (fistula or line), and scheduling more frequent dialysis sessions. (73)

**E- Laboratory Tests:** The results of the current study have been identified albumin significantly contributed to quality of life. This finding is similar to earlier studies that found a significantly contributed to quality of life when the independent variables were limited to health-related factors. However, the significance level for albumin was borderline (P = 0.04) and

when an outlier case was removed from the model, it ceased to be significant (P = 0.05). When examining bivariate correlations, albumin did not significantly correlate with overall quality of life (r = 0.09). [37] These findings are similar to an earlier study that not found a significant correlation between albumin and quality of life. [74] But there are several studies found that a significant relationship between albumin and quality of life. [58,60] This may explain why albumin was only significant when the health related factors were examined. [57, 58,60,73,75] One study using the QLI-D found a significant relationship between albumin and overall quality of life, but only in severely malnourished persons.[76] Severely malnourished was defined using numerous objective and subjective assessment data, not just albumin levels. Conversely, other studies reported that only 10% of the sample had a suboptimal albumin level and, more than likely, less than 10% would be classified as severely malnourished. Thus, albumin may not impact quality of life unless it reaches a critically low level; also this present study did not have enough critically low albumin levels to detect this relationship. [37]

Additionally in the present study the results revealed that serum albumin was significantly and associated with lower mean scores of PCS compared to mean scores of burden subscales and symptoms and problems and effects of the kidney disease and MCS. These findings are similar to several studies that reported hypo-albuminuria is markers of malnutrition in hemodialysis patients and have been found to be strongly related to a higher risk of mortality and also hypo-albuminuria was significantly and independently associated with lower scores in PCS and several generic scales of HRQoL at ($P < 0.05$). [77,78]

**F- Hemoglobin:** The results in the current study found that the level of hemoglobin has a significant correlation with quality of life. This result is similar with several studies which declared a significant correlation between hemoglobin and quality of life all used the SF-36 to measure quality of life and not a holistic quality of life scale.[28,29,32,37,50] Also in the present study, the results reported that hemoglobin level was significantly associated with all quality of life domains except mental health component. this results consistent with several studies shown that lower hemoglobin level was significantly associated with lower scores in MCS, role-physical, social function, and role emotional only.[38] In addition, one study reported that hemoglobin level was correlated with PCS (r= 0.197, P= 0.02) and MCS (r= 0.20, P= 0.019). [79]

Conversely, other studies results given dissimilar results where hemoglobin also did not contribute to any of the regression models and did not significantly correlate with quality of life and also no significant association between hemoglobin and dialysis times per week but there is a positive significant correlation between attainment of the hemoglobin target and attainments of multiple targets (albumin, cholesterol, and Kt/V ; P= .03). [63,26,73,74]

Therefore, serum albumin and hemoglobin may consider as better determinants of health status than quality of life. In one study results reported 43% of participants had hemoglobin levels less than normal, the reason it is significantly factor which contributing to quality of life but may be that their bodies have adapted to persistently low levels and thus, they do not experience symptoms that other persons with low hemoglobin levels might report. In addition, supplemental erythropoietin injections often assist dialysis patients in maintaining adequate hemoglobin levels. Thus, persons on hemodialysis may be able to sustain normal hemoglobin levels or adapt to low levels, rendering it an insignificant factor in perceived quality of life. [37]

## 6. Conclusion

The results of the present study shown the evidence that patients with End stage of renal failure on hemodialysis have poor QoL. In addition, the results gave a point by point portrayal of the QoL scores of hemodialysis patients and the effect of certain variables on their QOL. Low scores were found in the "PCS- Physical Component Summary ; Burden of Kidney Disease domains ; and Symptoms and Problems subscale while high scores were found in MCS – Mental Component Summary and Effects of Kidney Disease on Daily Life domains . Furthermore, the study revealed that the level of serum albumin was the most significant predictors influence QoL in patients with ESRD and the most controllable (modifiable) factors have a strong association with poorer Health-related QoL were education, employment, adherence of medication and duration of the dialysis; also there were a strong association with non-modifiable factors such as age ,gender. While there no relation with marital status, and nationality as well as dialysis hours and number of session for dialysis per week. Because of those factors attention should be given to the nurses and other health care providers as formal caregivers for early interventions that prevent further morbidity and minimize the mortality as well as improve HRQoL that may influencing the QoL in hemodialysis

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## 7. Recommendations

- Carried out the same study again with a large sample size with more different ethnicity, religious, spirituality, coping to be more representative for those factors as health-related that may impact on their quality of life.
- Longitudinal studies should be undertaken to study the change in QoL & HRQoL with the start of dialysis. These studies are likely to be of an observational nature to reflect a real community evidence based practice.
- Measures of QoL should be studied in the presence of progressive kidney disease in relation to emerging complications and their treatment.

 

- Longitudinal studies should be including patients who opt for non-dialysis therapy along with patients on hemodialysis.
- Longitudinal studies should be including patients who opt for peritoneal dialysis and hemodialysis therapy to assess their quality of life.

**Table 1:** Internal Reliability of Five Domains of the Kidney Disease Quality of Life KDQoL-36 ™ scale

| Subscales | Internal Reliability (Cronbach's) alpha |
|---|---|
| Physical Component Summary (PCS) | .82 |
| Mental Component Summary (MCS) | .86 |
| Burden of Kidney Diseases | .83 |
| Symptoms and Problems | .83 |
| Effects of Kidney Disease on Daily Life | .82 |
| Overall quality of life | .88 |

**Table 2:** Description of Socio-Demographic Characteristics of the Study Respondents

| Variables | Frequency | (%) |
|---|---|---|
| **Age (years)** | | |
| >18 – | 19 | 26.0 |
| 39 – | 44 | 59.0 |
| ≥60+ | 11 | 14.0 |
| Mean ± (SD) | 47.2 ± 12.47 | |
| **Gender** | | |
| Female | 27 | 36.0 |
| Male | 47 | 64.0 |
| **Nationality** | | |
| Emirates | 52 | 70.0 |
| Non Emirates | 22 | 30.0 |
| **Marital status** | | |
| Single | 17 | 23.0 |
| Married | 54 | 73.0 |
| Widowed | 3 | 4.0 |
| **Level of Education** | | |
| No formal education | 33 | 45.0 |
| Primary education | 27 | 36.5 |
| Secondary education | 14 | 18.5 |
| **Employment status** | | |
| Employed | 15 | 20.3 |
| Un-Employed (housewife/students/not working) | 59 | 79.7 |
| **Living status** | | |
| Live with family | 74 | 100 |
| Live alone | 0 | 0.0 |
| **Financial support** | | |
| Governmental health insurance | 74 | 100 |
| Private health insurance | 0 | 0.0 |

 

**Table 3:** Description of Biological Data of the Study Respondents with ESRD on Hemodialysis

| Variables | Frequency | (%) |
|---|---|---|
| **Co-morbidity (Pre-dialysis)** | | |
| Yes | 41 | 55.6 |
| No | 33 | 44.4 |
| **Adherence to medication** | | |
| Yes | 65 | 87.8 |
| No | 9 | 12.2 |
| **Level of hemoglobin** | | |
| 12-17.9 mg/dl (Normal range) | 15 | 20.2 |
| 8.1-11.9 mg/dl (Average ) | 21 | 28.4 |
| < 8 mg/dl (Below normal) | 38 | 51.4 |
| **Level of serum albumin** | | |
| <31.9 g/dl (Below normal) | 48 | 64.9 |
| 32.0 - 33.9 g/dl (Average ) | 26 | 35.1 |
| 34.0 - 50.0 g/dl (Normal range) | 0 | 0.0 |
| **Dialysis hours / session** | | |
| 2hrs. / week | 25 | 33.8 |
| 3hrs. / week | 49 | 66.2 |
| **No. of dialysis session /week** | | |
| Twice /week | 48 | 64.9 |
| Three time or more /week | 26 | 35.1 |
| **Duration of dialysis /months** | | |
| < 60 – | 56 | 75.7 |
| ≥ 60 – | 18 | 24.3 |
| Mean ± (SD) | 34.32 ±26.92 | |

**Table 4:** Mean, standards deviation, and Rank of the estimates of the Total Quality of Life and Five Domains in Patients with ESRD on Hemodialysis

| Variables | Mean | SD | Rank | Range |
|---|---|---|---|---|
| Quality of life-overall | 39.57 | 16.13 | - | 0-100 |
| PCS | 32.66 | 17.30 | 1 | 0-100 |
| MCS | 49.84 | 17.73 | 5 | 0-100 |
| Burden of Kidney Disease subscale | 34.61 | 12.26 | 2 | 0-100 |
| Symptoms and Problems subscale | 38.56 | 22.8 | 3 | 0-100 |
| Effects of Kidney Disease on Daily Life | 42.22 | 10.56 | 4 | 0-100 |

PCS = Physical Component Summary MCS = Mental Component Summary
Low QoL (Mean = 0 to 49.9), Average QoL (Mean = 50 to 74.9), and High QoL (Mean = more than 75)

 

**Table 5:** Mean, and standards deviations of the Quality of Life Domains in Patients with Hemodialysis in the Study According to their Socio-demographic Data

| Variables | PCS M±SD (32.66±17.3) | MCS M±SD (49.84±17.7) | Burden of Kidney Dis. Subscale M±SD (34.61±12.26) | Symptoms and Problems Subscale M±SD (38.56±22.8) | Effects of Kidney Disease on Daily Life M±SD (42.22±10.56) |
|---|---|---|---|---|---|
| **Age (years)** | | | | | |
| >18 – | 49.2±11.70 | 49.40±20.00 | 39.2±16.60 | 48.7±20.0 | 44.0±11.70 |
| 39 – | 25.0± 21.30 | 49.8 0±17.00 | 35.0±12.30 | 38.7±24.00 | 35.76±9.48 |
| ≥ 60+ yr. | 23.78±18.9 | 50.32±16.19 | 29.63±7.88 | 28.28±24.4 | 46.90±10.50 |
| | df=73 | df=73 | df=73 | df=73 | df=73 |
| | P= 0.000* | P= 0.050* | P= 0.034* | P= 0.038* | P= 0.022* |
| **Gender** | | | | | |
| Male | 36.68±22.53 | 58.88±16.51 | 49.68±13.38 | 49.45±22.53 | 51.62±13.45 |
| Female | 28.64±12.07 | 40.80±19.98 | 19.54±11.14 | 27.67±23.07 | 33.82±7.67 |
| | df=73 | df=73 | df=73 | df=73 | df=73 |
| | P=.041* | P= 0.038* | P= 0.033* | P= 0.061* | P= 0.052* |
| **Nationality** | | | | | |
| Emirates | 39.71±19.93 | 49.68±17.19 | 34.71±12.59 | 33.75±22.05 | 41.26±10.72 |
| Non Emirates | 25.61±14.67 | 50.0±18.27 | 34.51±11.93 | 43.37±23.55 | 43.18±10.40 |
| | df=73 | df=73 | df=73 | df=73 | df=73 |
| | P=0.748 | P=0.988 | P=0.848 | P=0.754 | P=0.566 |
| **Marital status** | | | | | |
| Single | 32.54±15.97 | 57.59± 18.24 | 32.54±12.10 | 49.01±23.7 | 41.42±10.62 |
| Married | 36.44±19.57 | 46.26±16.07 | 37.85±13.11 | 36.26±28.85 | 42.90±10.94 |
| Widowed | 29.00±16.36 | 45.67±18.88 | 33.44±11.57 | 30.41±20.85 | 42.34±10.12 |
| | df=73 | df=73 | df=73 | df=73 | df=73 |
| | P=0.421 | P= 0.343 | P= 0.545 | P=0.876 | P=0.932 |
| **Level of Education** | | | | | |
| No formal education | 20.59±15.53 | 40.38±19.97 | 39.19±11.36 | 44.94±24.02 | 45.70±10.35 |
| Primary education | 38.20±17.01 | 52.61±15.48 | 36.44±13.71 | 39.26±20.69 | 44.94±10.73 |
| Secondary education | 39.19±19.36 | 56.53±17.74 | 28.20+11.71 | 31.48±23.69 | 36.02±10.60 |
| | df=73 | df=73 | df=73 | df=73 | df=73 |
| | P=0.022* | P=0.05* | P=0.04* | P=0.024* | P=0.027* |
| **Employment status** | | | | | |
| Employed | 38.88±18.18 | 50.60±16.69 | 19.13±11.42 | 46.22±23.19 | 51.44±10.71 |
| Un-Employed | 26.44±16.42 | 49.08±18.77 | 18.88±10.89 | 30.90±22.41 | 33.00±10.41 |
| | df=73 | df=73 | df=73 | df=73 | df=73 |
| | P=.026* | P=.000* | P=.034* | P=.056* | P=.000* |

**Correlation is significant at the 0.001 level
* Correlation is significant at the 0.05 level

**Table 6:** Differences in the Estimates of Total Quality of life of the Patients with ESRD on Hemodialysis in the Study According to their socio-demographic data

| Health –Related Variables | Sum of Squares | df | Mean Squares | Calculated F Values | Sig. |
|---|---|---|---|---|---|
| **Age (years)** | | | | | |
| Between groups | 1365.541 | 2 | 682.770 | 3.693 | .030* |
| Within groups | 13124.887 | 71 | 184.848 | | |
| Total | 14490.428 | 73 | | | |
| **Gender** | | | | | |
| Between groups | 1543.433 | 1 | 1543.433 | 3.371 | .040* |
| Within groups | 32963.328 | 72 | 457.824 | | |
| Total | 34506.761 | 73 | | | |
| **Nationality** | | | | | |
| Between groups | 220.246 | 1 | 220.246 | 0.104 | .748 |
| Within groups | 152163.432 | 72 | 2113.381 | | |
| Total | 152383.678 | 73 | | | |
| **Marital status** | | | | | |
| Between groups | 352.200 | 2 | 176.100 | 2.177 | .121 |
| Within groups | 5743.148 | 71 | 80.889 | | |
| Total | 6095.348 | 73 | | | |
| **Level of education** | | | | | |
| Between groups | 10085.052 | 2 | 10085.052 | 5.103 | .027* |
| Within groups | 142298.639 | 71 | 1976.370 | | |
| Total | 152383.691 | 73 | | | |
| **Employment status** | | | | | |
| Between groups | 1483.138 | 1 | 1483.138 | 5.266 | .007** |
| Within groups | 20278.800 | 72 | 281.650 | | |
| Total | 21761.938 | 73 | | | |

**Correlation is significant at the 0.001 level
* Correlation is significant at the 0.05 level

**Table7:**Mean and standards deviations of the Quality of Life Domains in Patients with ESRD on Hemodialysis in the Study According to their Biological Factors

| Variables | (PCS) M±SD (32.66±17.30) | (MCS) M±SD (49.84±17.73) | Burden of Kidney Di M±SD (34.61±12.26) | Symptoms and Problems M±SD (38.56±22.8) | Effects of Kidney Disease on Daily Life M±SD (42.22±10.56) |
|---|---|---|---|---|---|
| **Co-morbidity (Pre-dialysis)** | | | | | |
| Yes | 29.06±15.44 | 40.58±10.60 | 24.65±12.00 | 36.17±20.60 | 38.23±9.84 |
| No | 36.26±19.16 | 59.10±11.89 | 44.57±12.52 | 40.95±25.00 | 46.21±11.28 |
| | P= 0.037* | P= 0.05* | P= 0.046* | P= 0.028* | P= 0.032* |
| **Adherence to medication** | | | | | |
| Yes | 35.91±17.16 | 62.68±14.41 | 41.10±12.63 | 42.68±22.69 | 48.90±10.94 |
| No | 29.41±17.44 | 37.00±21.05 | 28.12±11.89 | 34.44±22.91 | 35.54±10.18 |
| | df=73 | df=73 | df=73 | df=73 | df=73 |
| | P=0.021* | P=0.000** | P=0.001** | P=0.042* | P=0.023* |
| **Level of serum albumin** | | | | | |
| < 31.9 g/l | 21.49±15.32 | 40.53±19.79 | 22.59±13.16 | 27.59±13.81 | 30.17±11.15 |
| 32- 33.9 g/l | 43.48±19.28 | 59.15±15.67 | 46.63±11.36 | 49.53±31.79 | 54.27±9.970 |
| | P=0.000** | P=0.092 | P=0.000** | P=0.004** | P=0.000** |
| **Level of hemoglobin** | | | | | |
| (Normal = 12-17.9 mg/dl) | 46.09±17.45 | 50.79±19.51 | 43.33±24.13 | 53.34±24.67 | 55.27±10.15 |
| (Average = 8.1-11.9 mg /dl) | 33.77±17.71 | 49.29±18.22 | 38.70±20.81 | 34.29±20.22 | 43.42±10.95 |
| (Below normal < 8 mg/dl | 28.12±16.74 | 49.44±15.46 | 21.80±23.21 | 28.05±23.51 | 27.97±10.58 |
| | P=0.000** | P= 0.084 | P=0.033* | P=0.000** | P=0.000** |
| **Dialysis hours / session** | | | | | |
| 2hrs. / week | 36.80±14.18 | 45.89±16.59 | 31.25±12.06 | 33.54±6.90 | 41.87±10.37 |
| 3hrs. / week | 40.79±18.12 | 54.67±17.32 | 36.81±12.10 | 43.18±2.32 | 42.36±10.80 |
| 4hrs. / week | 20.39± 9.95 | 48.96±19.28 | 35.77±12.62 | 38.96±11.28 | 42.43±10.51 |
| | P=0.485 | P=0.082 | P=0.864 | P=0.654 | P=0.542 |
| **No. of session /week** | | | | | |
| Twice /week | 27.06±17.05 | 51.42±17.05 | 29.48±12.05 | 41.29±4.45 | 40.37±10.49 |
| Three time or more /week | 38.26±18.41 | 48.26±18.41 | 39.74±12.47 | 35.83±21.15 | 44.07±10.63 |
| | P=0.402 | P=0.563 | P=0.393 | P=0.421 | P=0.421 |
| **Duration of dialysis/month** | | | | | |
| < 60 - | 22.85±18.08 | 32.45±14.51 | 29.20±12.86 | 27.45±20.65 | 30.74± 17.12 |
| ≥ 60 - | 42.47±16.54 | 67.23±20.95 | 40.02±1.66 | 49.45±24.95 | 52.70±4.00 |
| | P=0.002** | P=0.052* | P=0.001** | P=0.000** | P=0.001** |

**Correlation is significant at the 0.001 level
* Correlation is significant at the 0.05 level

**Table 8:** Differences in the Estimates of Total Quality of life of the Patients with ESRD on Hemodialysis in the Study According to their Biological Characteristics

| Health –Related Variables | Sum of Squares | df | Mean Squares | Calculated F Values | Sig. |
|---|---|---|---|---|---|
| **Co-morbidity pre-dialysis** | | | | | |
| Between groups | 7070.910 | 1 | 7070.910 | 5.732 | .019* |
| Within groups | 13782.528 | 72 | 191.424 | | |
| Total | 20853.438 | 73 | | | |
| **Adherence to medication** | | | | | |
| Between groups | 2624.500 | 1 | 2624.500 | 3.371 | .040* |
| Within groups | 32967.864 | 72 | 457.887 | | |
| Total | 35592.364 | 73 | | | |
| **Level of serum albumin** | | | | | |
| Between groups | 569.154 | 1 | 569.154 | 2.944 | .021* |
| Within groups | 13921.274 | 72 | 193.51 | | |
| Total | 14490.428 | 73 | | | |
| **Level of hemoglobin** | | | | | |
| Between groups | 137.220 | 2 | 68.610 | .818 | .046* |
| Within groups | 5958.127 | 71 | 83.917 | | |
| Total | 6095.348 | 73 | | | |
| **Dialysis hours / session** | | | | | |
| Between groups | 88.316 | 1 | 88.316 | 1.059 | .352 |
| Within groups | 6002.064 | 72 | 83.362 | | |
| Total | 6090.380 | 73 | | | |
| **No. of session / week** | | | | | |
| Between groups | 7.440 | 1 | 7.440 | .088 | .768 |
| Within groups | 6087.907 | 72 | 84.554 | | |
| Total | 6095.348 | 73 | | | |
| **Duration of dialysis/month** Between g | 388.177 | 1 | 388.177 | 3.258 | .044* |
| Within groups | 8579.160 | 72 | 119.155 | | |
| Total | 8967.337 | 73 | | | |

**Correlation is significant at the 0.001 level
* Correlation is significant at the 0.05 level

**Table (9):** Linear Regression Summary for All Variables on Overall Quality of Life

| Significant Predicators | Standardized Coefficients (Beta) | T | P value |
|---|---|---|---|
| Level of serum albumin | - 0.609 | - 0.574 | .002** |
| Gender | + 0.404 | +3.760 | .003** |
| Employment status | + 0.309 | +1.010 | .012* |
| Level of Education | - 0.304 | -3.23 | .001** |
| Age | + 0.236 | +2.12 | .056* |
| Level of hemoglobin | - 0.235 | - 0.808 | .09 |
| Comorbidities pre-dialysis | - 0.213 | - 1.690 | .000** |
| Adherence of medication | - 0.090 | - 0.676 | .003** |
| Duration of dialysis | -.001 | - 0.010 | .001** |

** P< 0.001
* P < 0.05

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