

## Quality of life of patients undergoing haemodialysis at Edward Francis Small Teaching Hospital, The Gambia

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### Abstract

**Background:** Renal Replacement Therapies (RRTs) like haemodialysis only partially correct the symptoms experienced by a patient but provoke additional changes in his/her lifestyle. These changes can affect the Quality of life (QOL) of the patients. Therefore, the purpose of this study was to measure the quality of life of patients undergoing haemodialysis at the Edward Francis Small Teaching Hospital (EFSTH), The Gambia

**Method:** A cross-sectional study design was used. The Kidney Disease Quality of Life –Short Form (KDQOL-SF) questionnaire was adapted and used to collect data from 44 participants undergoing haemodialysis at the time of data collection. The data was analyzed using SPSS version 20 and t-test and Analysis of variance (ANOVA) were used to determine the difference in the quality of life, among the patients in relation to their demographic variables.

**Results:** The finding showed that the majority of the patients were female 30(68.2%) and the mean age was 43.3 years ranging from 20- 80 years. Hypertension was the major cause of renal failure (n=27; 61.4%) of the patients. The patients had a poor quality of life with a mean score of 34. 8%. Independent t-test shows that the Physical Composite Score (PCS), Mental Composite Score (MCS), and Kidney Disease Composite Score (KDCS) were all higher in males compared to females, with PCS being significant at a p-value of 0.007 and KDCS at a P-value of 0.01. The MCS was significantly higher among the unmarried patients at a p-value of 0.022 as well as for diabetes and hypertension compared to unknown causes of Kidney

**Conclusion:** The low PCS, MCS, and KDCS among the patients receiving haemodialysis treatment in EFSTH indicate poor quality of life. Therefore, more efforts need to be done to improve the quality of life for these patients.

**Keywords:** Quality of Life; Haemodialysis; Chronic Kidney Disease; End-Stage Renal Failure; The Gambia

### 1 Introduction

Chronic Kidney Disease (CKD) is an important public health problem that is increasing in terms of incidence and prevalence and has a worldwide prevalence of 10-13 % (Stenvinkel, 2010). Similar estimates are reported for Africa at 13.9 % (Stanifer et al., 2016). In many countries, CKD has reached epidemic proportions. For example, 10-13% of the populations in Taiwan, Iran, Japan, China, Canada, India, and the United States of America (USA) had signs of chronic kidney disease (Stenvinkel, 2010). It is present in middle-aged and elderly patients. End Stage Renal Disease (ESRD) is a serious complication of CKD and requires Renal Replacement Therapy (RRT). This is a form of therapy that replaces some or most of the functions of the normal kidneys. There are two forms of renal replacement therapy, namely dialysis, and renal transplant. Dialysis is the mainstay of treatment and it includes haemodialysis (HD) and Peritoneal Dialysis

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(PD). The estimated global population on maintenance haemodialysis is over a 1.1million and this is increasing by 7% every year (Sapkota et al., 2013). The rate of dialysis across Africa is less than 20 per million populations (pmp) as compared to a global prevalence of 223 pmp (Naicker, 2013). In Africa, 97% of dialysis patients are on haemodialysis, the preferable form of RRT (Matri, 2015). South Africa has a higher proportion of patients on peritoneal dialysis (13.5%) (Davids et al., 2016).

Before the introduction of haemodialysis in The Gambia, patients diagnosed with CKD requiring RRT were referred to the neighbouring country of Senegal to seek treatment. Haemodialysis was introduced in The Gambia in October 2006 through a donation of equipment and consumables from Taiwan. Human resource aid was and continued to be provided by the government of Cuba. Haemodialysis service is free for patients in The Gambia regardless of their economic status. However, accessibility is a problem for patients leaving in rural areas as it is only provided in EFSTH which is in the capital city.

A World Health Organization (WHO, 2010) report predicts that about 4% of the Gambian population could be diabetic by 2030 and diabetes mellitus is a risk factor for developing chronic kidney disease (Omoleke, 2013). It has been proven that quality of life (QoL) is very poor among CKD patients (Abraham et al., 2012). This may be due to the fact that haemodialysis is associated with increased morbidity, mortality, and decreased QoL (Msaad, et al., 2019). QoL has frequently been overlooked yet it is a critical consideration in evaluating the overall medical care of CKD patients. QoL is an essential component for any medical treatment and especially for the ones as expensive as dialysis. This is even more important if one acknowledges that the prevalence and costs of haemodialysis continue to escalate. However, no study was found in the literature investigating the quality of life of haemodialysis patients in the EFSTH. This created a knowledge gap that this study intends to fill. Hence, the aim of this study was to measure the quality of life of patients undergoing haemodialysis at the EFSTH.

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## **2 Material and methods**

### **2.1 Study design**

This study used a cross-sectional study design to assess the quality of life of patients undergoing haemodialysis at the EFSTH.

### **2.2 Sample size**

Sampling was not done due to the small population size. Therefore the study participants consisted of all 44 patients undergoing haemodialysis at the time of the study.

### **2.3 Research Instrument**

The kidney disease quality of life, short form questionnaire (KDQOL-SF) version 1.3 developed by (Hays et al., 1994) was adapted for the study. It is a multidimensional, reliable, and validated instrument specifically designed for dialysis patients. Modifications were made to make the questionnaire suitable for use in this study. The questionnaire was divided into 5 sections; demographic background (5 items) consists of age, educational level, gender, ethnicity, and marital status. The Physical Composite Summary (PCS) measures physical function and pain. The Mental Composite Summary (MCS) assessed emotion, emotional well-being, energy, and social function and, the Kidney Disease Composite Summary (KDSCS) summarizes items of the kidney disease including symptoms/problems, effects of kidney disease on daily life, the burden of kidney disease on cognitive function, work status, sexual function, quality of social interaction and sleep. The fifth section is on quality of life and general health status (14 items). The scoring procedure for the KDQOL-SF™ included that items in the same scale were averaged to create the scale score. Thereafter, the percentage of the average scale score was calculated to create a 0-100% possible range. A score of 0 – 49 was considered poor, and 50- 100 was good quality of life. The tool was pretested and it had a total reliability of 0.766.

### **2.4 Data collection procedure**

The Data were collected by the researchers. The researcher-administered method was used to collect the data from the study participants on their appointed days for haemodialysis at the EFSTH. The questionnaire was verbally translated from the English language to the major local languages (i.e., Mandinka, Wolof, and Fula) as all of the participants could understand one or more of these languages. The data was collected using one-to-one in two of the private rooms in the haemodialysis unit.

## 2.5 Data analysis method

IBM SPSS (version 20) was used to analyze data. Descriptive statistics such as frequency were used to describe the grouped data (categorical) whilst means and standard deviation were used to summarize continuous data. A t-test and analysis of variance (ANOVA) tests were used to determine the differences in the quality of life between the demographic variables. The statistical significance level was set at  $p < 0.05$ .

## 2.6 Ethical consideration

Ethical approval was given by the Joint Gambia Government/Medical Research Ethics committee. The study was also approved by the Edward Francis Small Teaching Hospital Ethics and Research Committee.

## 3 Results

The result presented in Table 1, shows that a total of 44 patients were included in the study with a 100% response rate. The majority of them were females representing 68.2% ( $n = 30$ ). Their mean age was 43.25 years ( $SD = 15.932$ ). Most of them were illiterates ( $n = 16, 36.4\%$ ), from the Mandinka tribe ( $n = 17; 38.6\%$ ) and were married ( $n = 31; 70.5\%$ ).

**Table 1** Demographic characteristics of study participants ( $n=44$ )

Variables	Frequency	Percentage
<b>Age</b>		
20-40 Years	20	45.5
41-60 years	20	45.5
61-80 years	4	9.1
Mean (SD)	43.25(15.9)	
<b>Educational level</b>		
Non	16	36.4
Lower basic	3	6.8
Upper basic	10	22.7
Senior Secondary/GCE	10	22.7
University degree	2	4.5
Professional or Graduate degree	3	6.8
<b>Gender</b>		
Male	14	31.8
Female	30	68.2
<b>Ethnicity</b>		
Fula	4	9.1
Mandinka	17	38.6
Jola	2	4.5
Wollof	8	18.2
Other	13	29.5
<b>Marital Status</b>		
No	13	29.5
Yes	31	70.5

### 3.1 Mean quality of Life score of respondents

The mean percentage score for each domain of the KDQOL-SF was calculated and the highest score was 47.90% for physical and general health status. Patients had the lowest KDQOL-SF score on the effect of kidney disease on daily life activities such as sex, sleep, work, and social interaction which was 36.1%. The overall score on the quality of life of the patients was 34.8 % which indicates poor quality of life as shown in table 2.

**Table 2** Mean percentage scores for each domain of the KDQOL-SF among respondents (n=44)

Variables	Mean (SD)	Interpretation
Physical and general health status	47.9 (7.1)	Poor
Mental and social health status	44.5 (6.2)	Poor
Effect of Kidney Disease on daily life activities such as work, sleep, sex, and social interactions	36.1 (6.8)	Poor
The burden of kidney disease as a result of its management	38.8 (5.2)	Poor
Disturbing symptoms/problem list	45.5 (6.6)	Poor
Total quality of life	34.8 (6,4)	Poor

Note: scale = 0 - 49 (poor quality) and 50 - 100 (good quality)

### 3.2 Influence of patient's characteristics on quality of life score.

Independent t-tests and ANOVA tests were to find out the influence of demographic variables on the three domains of the KDQOL-SF tool as the physical composite score (PCS), Mental composite score (MCS), Kidney disease composite score (KDCS) were all higher in males compared to females, with PCS being significant at a p-value of 0.007 and KDCS at a P-value of 0.01. The MCS was significantly higher among unmarried at a p-value of 0.022 as well as for diabetes and hypertension compared to those with unknown causes of Kidney diseases as shown in table 3.

**Table 3** The effect of patient characteristics on the scores of various components of the KDQOL-SF questionnaire

	PCS		MCS		KDCS	
	Score	P-value	Score	p-value	Score	p-value
<b>Gender</b>						
Male	10.7262	0.007	11.2107	0.169	39.3988	0.01
Female	9.6500		10.4317		33.6093	
<b>Marital status</b>						
Unmarried	10.0615	0.795	10.7654	0.022	34.8033	0.337
Married	9.9634		10.6435		35.7232	
<b>Educational status</b>						
Educated	10.1655	0.151	10.8554	0.854	35.4869	0.925
Non-educated	9.6896		10.3719		35.3894	
<b>Cause of kidney disease</b>						
Unknown	9.2278	0.424	9.0833		31.2014	0.283
Diabetes	9.5167		10.0500		35.1174	
Hypertension	10.1463		10.9806	0.041	36.1783	

## 4 Discussion

This study is the first study done in the Gambia to assess the quality of life among patients undergoing haemodialysis using the KDQOL-SF12. Since Haemodialysis started relatively late in the Gambia compared to other West African countries, it is important to conduct this study to find out the quality of life of patients which can serve as a tool for assessment of their well-being. The findings showed that the majority of the respondents were females (68.2%), this may be due to the fact the women are mostly affected by being overweight, eclampsia in late pregnancy, and non-communicable diseases like hypertension and diabetes mellitus and also CKD, which are risk factors for ESRD (National Kidney foundation, 2020; Piccoli et al., 2018).

The mean scores for each of the domains of the KDQOL-SF were on a scale of 0-49 (poor quality), and 50-100 (good quality). The mean score for all the domains for patients receiving haemodialysis care in the Gambia was poor. It has been reported that the quality of life score for a dialysis patient is generally quite low compared to healthy humans (Al Salmi et al., 2021). The overall quality of life score of patients in our study setting is significantly lower (34.8) compared to the quality of life scores found among patients in other studies (Al Salmi et al., 2021; Mahato et al., 2020). The cause of poor quality of life might be due to under treatment as a result of inadequate availability of materials, medications, and proper laboratory tests to analyze the effectiveness of haemodialysis treatment.

The kidney disease summary component (KDSC), physical component summary (PCS) and mental component summary (MCS) are summary scores that determine the quality of life. The higher the score the higher the quality of life. We found a poor composite score for all three domains among the patients undergoing haemodialysis in this center. The MCS and KDSC scores were significantly higher in males compared to female respondents. This may be because generally, men have a higher income than the female population in the Gambia, and evidence has shown that unemployment and low income are associated with low MCS and PCS (Alhaji et al., 2018; AL-Jumaih et al., 2011). The PCS score of the patients was poor which indicates that they have a higher risk of dying as compared to those with good quality because mortality was found to be associated with poor physical health among dialysis patients (Østhus et al., 2012). Poor MCS scores can also lead to depression, which was also found to be a positive predictor of mortality (Østhus et al., 2012). The MCS was significantly higher in unmarried patients than the married patients. This may be since married women in the Gambia have a higher responsibility, especially in breeding children and also the burden of family care among men may have some mental effect on the male patients. However, in our study, we did not find any difference in PCS, MCS, and KDSC scores between educated and uneducated patients. This finding is in contrast with other studies done in Saudi Arabia (Ebrahim et al., 2012; AL-Jumaih et al., 2011), Nepal (Mahato et al., 2020), and the United States of America (Alhaji et al., 2018) where attainment of higher education was found to be associated with a better quality of life score. A significant number of our study population were having hypertension and diabetes, with quite a number of the patients having the cause of their kidney disease unknown. The MCS score was significantly higher among patients with diabetes and hypertension than those with unknown causes of ESRD. These diseases are found to be associated with the worst outcome for haemodialysis patients (Mandoorah et al., 2014).

The strength of this study was that it is the first study that looks at the quality of life of patients undergoing haemodialysis in the Gambia. The study population was highly representative as the study included all the patients that were undergoing haemodialysis since it is the only center providing this service.

The limitation of this study included that we could not determine whether the low quality of life was due to the kidney disease process or inadequacy of haemodialysis treatment due to inadequate laboratory services. The study did not measure the effectiveness of the dialysis treatment.

### *List of Abbreviations*

- CKD: Chronic Kidney Disease
- EFSTH: Edward Francis Small Teaching Hospital
- HD: Haemodialysis
- PD: Peritoneal Dialysis
- RRT: Renal Replacement Therapy
- ESRD: End Stage Renal Disease
- QOL: Quality of life
- KDQOL-SF: Kidney Disease Quality of Life –Short Form
- PCS: Physical composite score
- MCS: Mental composite score
- KDSC: Kidney disease composite score

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## 5 Conclusion

The quality of life of patients undergoing haemodialysis in the Gambia was found to be poor. The PCS, MCS, and KDSC scores, which are predictors of mortality for patients were all low in our patients. This means that if efforts are not made the mortality rate among these patients may be high. Improving the haemodialysis services particularly the prevention of shortage of dialysis materials is quite paramount. To improve the PCS, MCS, and KDSC scores of patients in the Gambia more public health interventions should be implemented by providing social and mental support for the patients.

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### Compliance with ethical standards

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#### *Disclosure of conflict of interest*

The authors declare no competing interest

#### *Statement of ethical approval*

Ethical approval was given by the Joint Gambia Government/Medical Research Ethics committee. The study was also approved by the Edward Francis Small Teaching Hospital Ethics and Research Committee.

#### *Statement of informed consent*

All the study respondents signed informed consent forms before participating in the study

#### *Availability of supporting data*

The supporting data of the study can be accessed from the corresponding author upon request.

#### *Authors' contributions*

MS and HTB conceived the study and wrote the research proposal. MS collected the data, HTB and YS analyzed the data, MS wrote the Report, and HTB and YS reviewed it.

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