

# Quality of Life of Patients Undergoing Haemodialysis at Edward Francis Small Teaching Hospital

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## Article

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# Abstract

**Background:** Renal Replacement Therapies (RRTs) like haemodialysis only partially corrects the symptoms experienced by the patient and provokes additional changes in the lifestyles of patients. These changes can affect 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 analysed using SPSS version 20 and t-test and Analysis of variance (ANOVA) were used to determine the difference of 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 have 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), 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 a poor quality of life. Therefore, more efforts need to be done to improve the quality of life for this patients.

## Background Information

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 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 United States of America (USA) had signs of chronic kidney disease (Stenvinkel, 2010). It presents 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 which replaces some or most of the functions of the normal kidneys. There are two forms of renal replacement therapy, namely dialysis and renal transplant. The dialysis is the mainstay of treatment and it includes haemodialysis (HD) and Peritoneal Dialysis (PD). 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 the

higher proportion of patients on peritoneal dialysis (13.5%) (Davids et al., 2016). The estimated global population on maintenance haemodialysis is over 1.1million and this is increasing by 7% every year (Sapkota et al., 2013).

Prior to 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 donation of equipment and consumables from Taiwan. The human resource aid was and continued to be provided by the government of Cuba. Haemodialysis service is free for the patients in The Gambia regardless of their economic status (Caloto, Cuba and Tellez, 2013). However, accessibility is a problem for patients living in the rural areas as it is only provided in EFSTH which is in the capital city.

A recent World Health Organisation (WHO) report predicts that about 4% of the Gambian population could be diabetic by 2030 (Omoleke, 2013) and diabetes mellitus is a risk factor for developing chronic kidney disease. It has been proven that the quality of life (QoL) is very poor among CKD patients (Abraham et al., 2012). Haemodialysis is associated with increased morbidity, mortality and decreased QoL (Msaad, et al., 2019). QoL is frequently overlooked yet 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 prevalence and costs of haemodialysis continues 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 which this study intends to fill.

## **Aim of the study**

To measure the quality of life of patients undergoing haemodialysis at the EFSTH.

## **Methods**

### **Study design**

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

### **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.

## **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 wellbeing, energy and social function and, the Kidney Disease Composite Summary (KDCS) summarizes items of the kidney disease including symptoms/problems, effects of kidney disease on daily life, 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<sup>TM</sup> included that items in the same scale were averaged to create the scale score. Thereafter, percentage of the average scale score was calculated to create a 0-100% possible range. The score of 0 – 49 was considered a poor, and 50- 100 was good quality of life. The tool was pretested and it had a total reliability of 0.766.

## **Data collection procedure**

The Data were collected by the researchers. 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 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. The data collection period lasted for a month.

## **Data analysis method**

IBM SPSS (version 20) was used to analyse 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. Statistical significance level was set at  $p < 0.05$ .

## **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. We confirm that all the methods were performed in accordance with guidelines and regulations of these committees.

## **Results**

A total of 44 patients were included in the study. Majority of them were females representing 68.2% (n =30). Their mean age was 43.25years (SD = 15.932) with majority of them falling within the age category of 20-40 years (n =20; 45.5%). The majority were from the Mandinka tribe (n =17; 38.6%) and married (n = 31; 70.5%). The highest educational levels attained by most of the participants were upper basic school (n =10; 22.7%; Table 1)

Table 1		
Demographic characteristics of study participants ( n=44)		
Variables	Frequency	Percentage
Age		
20-40 Years	20	45.5
41-60 years	20	45.5
61-80 years	4	9.1
Mean (SD)	43.25(15.9)	
Educational level		
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
Gender		
Male	14	31.8
Female	30	68.2
Ethnicity		
Fula	4	9.1
Mandinka	17	38.6
Jola	2	4.5
Wollof	8	18.2
Other	13	29.5
Marital Status		

No	13	29.5
Yes	31	70.5

## 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 quality of life was for the patients 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
Burden of the 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)

Influence of patients characteristics on quality of life score.

Independent t-test and ANOVA tests were to find out the influence of demographic variables on the three domains of the KDQOL-SF tool such 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
Gender						
Male	10.7262	0.007	11.2107	0.169	39.3988	0.01
Female	9.6500		10.4317		33.6093	
Marital status						
Unmarried	10.0615	0.795	10.7654	0.022	34.8033	0.337
Married	9.9634		10.6435		35.7232	
Educational status						
Educated	10.1655	0.151	10.8554	0.854	35.4869	0.925
Non-educated	9.6896		10.3719		35.3894	
Cause of kidney disease						
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	

## 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 tool for assessment of their wellbeing. 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 overweight, eclampsia in late pregnancy and non-communicable diseases like hypertension and diabetes mellitus and also CKD, which are risk factors for ESRD (Kidney Failure Risk Factor, 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 domain for patients receiving haemodialysis care in the Gambia was poor. It has been reported that the quality of life score for dialysis patient is generally quite low compared to healthy human (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, proper laboratory test to analyse 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 the three domains among the patients undergoing haemodialysis in this centre. The MCS and KDSC scores were significantly higher in males compared to the female respondents. This may be due to the fact that generally men have higher income than the female population in the Gambia and evidence as 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). The 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 due to the fact that married women in the Gambia have 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 (AL-Jumaih et al., 2011), Nepal (Mahato et al., 2020) and 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 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 centre 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.

## 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. These

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 score of patients in the Gambia more public health intervention should be implemented by providing social and mental support for the patients.

## **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

KDCS Kidney disease composite score

## **Declarations**

### **Ethical Approval and Consent to Participate**

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

### **Consent for publication**

All authors have approved the manuscript and consented to its submission for publication

### **Data Availability**

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

### **Competing interests**

The authors declare no competing interest

## Funding

No funding was received for this study

## 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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