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Assessment of Quality of Life in Patients with Chronic Kidney Disease Using the SF36 Questionnaire in the Nephrology Department of Donka National Hospital

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Abstract

Introduction: Chronic kidney disease is a major issue in medical and economic decision-making. Assessing quality of life allows both the medical community and health authorities to evaluate how patients perceive their health status. Measuring quality of life helps reduce the information asymmetry between patients and the medical profession. Our objective was to assess the quality of life of patients with chronic kidney disease who are not on dialysis, as well as the factors influencing it in the nephrology department. **Patients and methods:** our descriptive and analytical cross-sectional study covered a period of seven months, from September 1, 2020, to March 31, 2021. The assessment was based on a self-administered questionnaire used in surveys of patients with chronic kidney disease, consisting of 36 items exploring eight different dimensions that allow for an approach to both the mental and physical components of health. **Results:** This descriptive cross-sectional study assesses the quality of life of 74 patients with chronic kidney disease (CKD) not on dialysis in Guinea, using the SF-36 questionnaire. A large majority of patients (82.43%) were classified as dependent or non-autonomous based on their scores. Dyspnoea was identified as the only factor significantly associated with poor quality of life in the bivariate analysis. **Conclusion:** Assessing quality of life should therefore be an important objective for nephrologists in the therapeutic management of patients with chronic kidney disease.

Keywords

Quality of Life, Chronic Kidney Disease, Donka Guinea

1. Introduction

Quality of life (QoL) is defined by the World Health Organization (WHO) as an individual's perception of their place in existence, in the context of the culture and value systems in which they live, in relation to their goals, expectations, standards, and concerns [1]. It is a very broad concept, influenced in complex ways by the individual's physical health, psychological state, level of independence, social relationships, and relationship to the essential elements of their environment [2].

As chronic kidney disease is a major issue in medical and economic decision-making, assessing quality of life allows both the medical community and health authorities to evaluate how patients perceive their state of health. Measuring quality of life helps to reduce the asymmetry of information between patients and the medical profession [3]-[5]. Unlike the criteria generally used to measure health status, QOL incorporates the individual's perception, making it possible to explore not only the impact of the disease but also its repercussions on daily life [6]. Improving QOL in patients with renal failure is therefore an important goal of therapeutic management, which should enable them to live a life that is as close to normal as possible, both in terms of duration and quality [7].

For this reason, tools for measuring quality of life are made available to medical staff, in particular the SF36 questionnaire, whose questions can be grouped into several dimensions. The SF36 is the most frequently used generic questionnaire in the context of end-stage chronic kidney disease [5]. One of the main advantages of the SF36 is that it incorporates both behavioral and physical data from the patient.

Chronic kidney disease (CKD) is a long-term, progressive disease that is often associated with disability and the threat of serious complications [3]. The end-stage of the disease has a considerable impact on daily life, making it difficult to perform the activities necessary for personal well-being and requiring replacement therapy such as hemodialysis [1] [8].

In Guinea, several initial studies have been conducted on chronic kidney disease, including a few on the QOL of patients in the end-stage of chronic kidney disease without access to dialysis or in dialysis patients [4] [9]. To our knowledge, no studies have been conducted to assess the QoL of patients with moderate to severe chronic kidney disease who are not on dialysis.

We therefore chose this topic, with the following objectives:

Our objective was to assess the quality of life of patients with chronic kidney disease who are not on dialysis, as well as the factors influencing it in the nephrology department.

2. Patients and Methods

This was a descriptive and analytical cross-sectional study covering a period of seven months, from September 1, 2020, to March 31, 2021.

2.1. Source Population

All patients followed in the Nephrology Department during our study period were targeted.

2.2. Study Population

The study population included all patients with chronic kidney disease who were followed up in the Nephrology Department during our study period.

2.3. Selection Criteria

2.3.1. Inclusion Criteria

The following patients were included in this study:

- Those with creatinine clearance ≤ 60 ml/min; otherwise, all patients with stages 3, 4, and 5 chronic kidney disease.
- those who had not undergone dialysis;
- those who agreed to participate in the study.

2.3.2. Exclusion Criteria

The following patients were excluded from this study: all patients undergoing dialysis or awaiting referral to another department for the treatment of other conditions, as well as patients who died within a few hours of hospitalization.

2.4. Recruitment Method

This was a study in which patients were selected consecutively. The sample size was calculated using Schwartz's formula:

$$n = t^2 \times p \times (1 - p)/m^2$$

- n: Minimum sample size required to obtain significant results for a given event and risk level.
- t: Confidence level (the standard value for a 95% confidence level is 1.96).
- p: Estimated proportion of the population with the characteristic.
- m: Margin of error (generally set at 5%).

To calculate our sample size, we referred to the study conducted in the Nephrology Department from January 1 to December 31, 2010. During the study period, 263 patients were hospitalized, 69 of whom were selected for the study after calculations [3].

To obtain our proportion (p), we calculated the ratio of 69/263, which gave us 26%. Replacing the letters with their values and setting the margin of error at 10%, we obtained:

$$n = 1.96^2 \times 0.26 \times 0.74/0.1^2 = 73.91$$

That is, $n = 74$ individuals

NB: generally, the margin of error is set at 5%, but in our case we set it at 10%, because with 5% we obtained a sample size of 295, which could not guarantee our study duration, which has an average duration of 7 months.

2.5. Data Collection

The data were collected using a survey form consisting of a self-administered questionnaire. Where necessary, information was collected through interviews with patients who did not have a high level of education. We used medical records to supplement the information.

The information collected included sociodemographic characteristics, clinical data, paraclinical data, the SF36 questionnaire, and patient progress.

2.6. Data Describing Quality of Life

The SF 36 questionnaire [5] [7].

This is a self-administered questionnaire used in surveys of patients with chronic kidney disease. It consists of 36 items exploring eight different dimensions, allowing for an assessment of both the mental and physical components of health.

- Physical functioning (ten items): coded as very limited (1), somewhat limited (2), and not limited at all (3). It measures limitations in physical activities such as walking, climbing stairs, bending forward, lifting objects, and strenuous and intense efforts.
- Mental health (five items): measures anxiety, depression, well-being, and nervousness; divided into constantly (1 or 6), very often (2 or 5), often (3 or 4), sometimes (4 or 3), rarely (5 or 2), and never (6 or 1).
- General health (five items): measures general health and resistance to illness. Divided into different categories: excellent (5.0), very good (4.4), good (3.4), fair (2.0), and poor (1.0).
- Limitations due to physical condition (four items): measures discomfort due to physical condition in daily activities: limitations in certain activities or difficulty in performing them; coded as yes (1) or no (2).Weight was measured using SECA or Salter scales.
- Vitality (four items): measures vitality, energy, fatigue, exhaustion; broken down into constantly (1 or 6), very often (2 or 5), often (3 or 4), sometimes (4 or 3), rarely (5 or 2), and never (6 or 1).
- Limitations due to mental state (three items): measures discomfort due to mental state in daily activities: less time spent at work, sloppy work; coded as yes (1) or no (2).
- Physical pain (two items): measures the intensity of pain, divided into very severe (1), severe (2,2), moderate (3,1), low (4,2), very low (5,4), none (6) and the discomfort caused, which is also divided into very much (1), a lot (2), moderately (3), a little (4) and not at all (6 if question 7 = none, otherwise 5).
- Life and relationships with others (two items): measure limitations on social activities due to physical problems, either greatly (1), a lot (2), moderately (3), a little (4) or not at all (5), and due to psychological problems, either constantly

(1), most of the time (2), sometimes (3), rarely (4) or never (5).

- A ninth dimension corresponding to an additional question on health trends.

2.7. Progressive Modalities

Qualitative variables coded as yes or no.

The aim was to determine whether the progression of the disease was favorable, unfavorable, or resulted in death.

2.8. Entry and Analysis

The data were entered using Epi Data software version 3.1 and analyzed using SPSS software version 21.0. We used Excel software from the Office 2016 package to calculate the score.

We performed a descriptive analysis by calculating frequencies for qualitative variables and quantitative variables by comparing means while respecting their extremes and standard deviation. Our proportions were compared using the Chi-square (χ^2) or Fischer tests.

To determine patients' QOL, we calculated scores for each dimension corresponding to the average of the items completed, then multiplied this by the total number of items in the dimension in question.

A score is calculated if all the items that make up a dimension are present or if less than half of these items are missing. The scores are then normalized from 0 to 100, with 0 corresponding to the worst quality of life and 100 to the best.

We divided patients into two groups based on their autonomy. Autonomy was defined as a process whereby patients strengthen their decision-making and action-taking abilities in order to become more independent in managing their health. It takes into account the various dimensions of the questionnaire mentioned above. We assessed the score for each dimension and evaluated all the scores for all dimensions. An average below 50/100 was considered non-autonomous; above 50/100 was considered autonomous. By classifying patients into these two groups, we were able to perform a bivariate analysis.

To determine the factors influencing patients' QOL, we performed a bivariate logistic regression analysis. All variables with a p-value of less than 20% were included in the model. All variable modalities with a p-value of less than 0.05 were retained as statistically significant factors in the bivariate analysis.

2.9. Difficulty of the Study

The complexity of adapting the SF36 questionnaire into local languages was the main difficulty in our study.

3. Results

Our main findings relating to socio-demographic and clinical data are presented in **Tables 1-5** and **Figure 1**.

Table 1 describes the socio-demographic characteristics of patients with chronic kidney disease. Women were the most affected, and almost all older people were affected, especially the elderly.

Table 1. Distribution of 74 patients with CRF in the nephrology department according to sociodemographic characteristics.

Variables	Number	Percentage
Frequency	**144**	100
Patients included	74	51.4
Patients excluded	31	21.5
Patients not included	39	27.1
Age (years)	**n = 74**	
[16 - 25]	11	14.86
[26 - 35]	12	16.22
[36 - 45]	13	17.57
[46 - 55]	16	21.62
[56 - 65]	16	21.62
[66 - 75]	6	8.11
Sex		
Male	32	43.24
Female	42	56.76

Figure 1 concerns pain intensity in patients with CRF. More than 20% of patients experienced very severe pain.

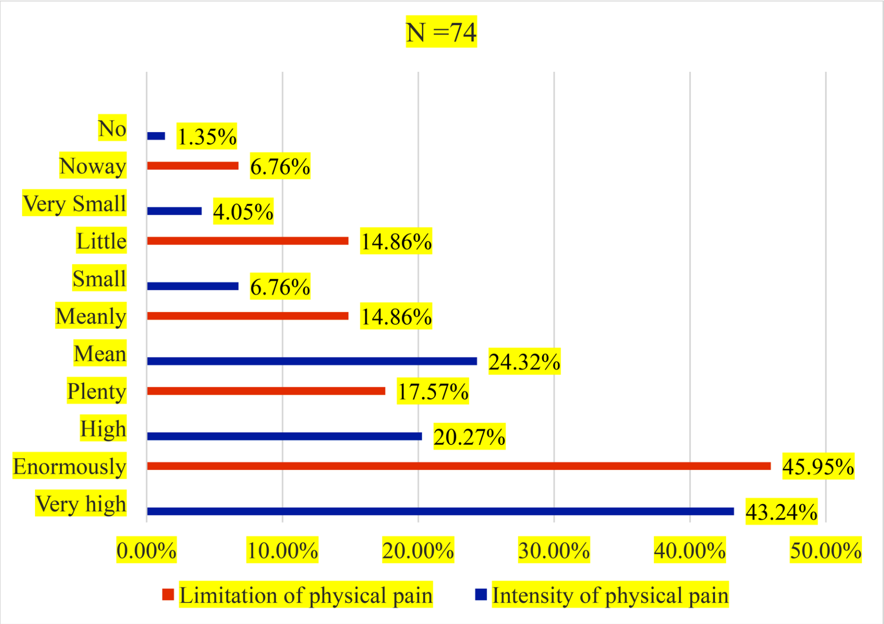

Figure 1. Distribution of non-dialysis CRF patients according to pain intensity and discomfort in the nephrology department of Donka University Hospital from September 1, 2020, to March 31, 2021.

Tables 2-4 concern the assessment of patients' quality of life according to the SF36 components. Finally, Table 5 concerns the factors associated according to the univariate analysis.

Table 2. Distribution of non-dialysis CRF patients according to general health status in the nephrology department of Donka University Hospital from September 1, 2020, to March 31, 2021.

Variables	Number	Percentage
Assessment of general health		
Poor	19	25.68
Fair	39	52.70
Good	16	21.62
Independence		
Independent	13	17.57
Not independent	61	82.43
Change in health status		
Much less good	36	48.65
Somewhat worse	28	37.84
About the same	10	13.51
Somewhat better than last year	0	0.00
Much better than last year	0	0.00

Table 3. Distribution of non-dialysis CKD patients according to vitality and mental health in the nephrology department of Donka University Hospital from September 1, 2020, to March 31, 2021 (N = 74).

Vitality	Always	Very often	Often	Sometimes	Rarely	Never
Did you feel energetic?	16 (21.6%)	27 (36.5%)	20 (27.0%)	6 (8.1%)	4 (5.4%)	1 (1.4%)
Did you feel full of energy?	16 (21.6%)	42 (56.8%)	10 (13.5%)	5 (6.8%)	1 (1.4%)	0 (0%)
Did you feel exhausted?	20 (27.0%)	29 (39.2%)	16 (21.6%)	7 (9.5%)	2 (2.7%)	0 (0%)
Did you feel tired?	21 (28.4%)	31 (41.9%)	12 (16.2%)	7 (9.5%)	3 (4.1%)	0 (0%)
Mental health						
Did you feel very nervous??	3 (4.1%)	12 (16.2%)	13 (17.6%)	18 (24.3%)	10 (13.5%)	18 (24.3%)
Did you feel so discouraged that nothing could cheer you up?	1 (1.4%)	10 (13.5%)	11 (14.9%)	13 (17.6%)	6 8.1%)	33 (44.6%)
Did you feel calm and relaxed?	2 (2.7%)	16 (21.6%)	41 (55.4%)	14 (18.9%)	1 (1.4%)	0 (0%)
Did you feel sad and downcast?	8 (10.8%)	12 (16.2%)	15 (20.3%)	24 (32.4%)	15 (20.3%)	0 (0%)
Did you feel happy?	4 (5.4%)	12 (16.2%)	27 (36.5%)	16 (21.6%)	14 (18.9)	1 (1.4%)

Table 4. Distribution of non-dialysis CKD patients according to social functioning at the nephrology department of Donka University Hospital from September 1, 2020, to March 31, 2021 (N = 74).

Life and relationships:	Number	Percentage
Physical condition (SF1)		
Extremely	3	4.1
A lot	13	17.6
Moderately	7	9.5
A little	7	9.5
Not at all	44	59.5
Total	74	100.0
Emotional condition (SF2)		
All the time	1	1.4
Most of the time	11	14.9
Sometimes	23	31.1
Rarely	8	10.8
Never	31	41.9
Total	74	100.0

Table 5. Correlation between factors and QOL in non-dialysis CKD patients in the nephrology department of Donka University Hospital from September 1, 2020, to March 31, 2021.

Variables	**Conditions**	**Patients' quality of life**		**p value**
		Independents	**Dependents**	
Sex	Male	7	25	0.29
	Female	6	36	
Age	16 - 25	2	9	0.31
	26 - 35	0	12	
	36 - 45	4	9	
	46 - 55	3	13	
	56 - 65	2	14	
	66 and more	2	4	
Occupation	Employee	2	9	0.89
	Self-employed	7	32	
	Housewife/house-husband	4	17	
	Pupil/student	0	3	

Continued

Marital status	Married	9	43	0.91
	Single	2	8	
	Divorced	0	2	
	Widowed	2	8	
Level of education	Primary school	3	4	0.31
	Secondary school	3	14	
	University	1	6	
	Not in school	6	37	
Clearance	Moderate CRF	11	52	0.88
	Severe CRF	2	8	
	End-stage CRF	0	1	
High blood pressure	Yes	11	56	0.60
	No	2	5	
Diabetes	Yes	2	13	0.73
	No	11	48	
Body Mass Index	Underweight	1	1	0.46
	Normal	10	51	
	Overweight	2	9	
Asthenia	Yes	9	55	0.67
	No	4	6	
Dyspnea	Yes	4	40	0.03
	No	9	21	
Vomiting	Yes	7	36	0.76
	No	6	25	
Lower Limb Edema	Yes	5	19	0.74
	No	8	42	
Epigastric pain	Yes	3	29	0.13
	No	10	32	
Hemoglobin	<8	4	33	0.22
	≥8	9	28	

4. Discussion

The complexity involved in adapting the SF36 questionnaire into our local languages was our main difficulty.

The modest size of our sample and the single-center nature of our study were our limitations.

However, during the study period, we identified 105 patients, 74 of whom were included, representing 70.47% of cases (**Table 1**). Our result is higher than that of Bah AO *et al.* in Guinea [2], who reported a frequency of 55.2%. This difference can be explained by our larger sample size compared to theirs, as we took into account all three stages of CRF, unlike them, who only included patients in the terminal stage of CRF.

The average age in our study is lower than that of Eyeni SDT *et al.* in Congo Brazzaville [10]**,** who found an average age of 51.8 ± 15.2 years. This difference could be due to the fact that African patients with chronic renal failure are young adults who are socially active and easily exposed to certain environmental factors. However, we noted a predominance of females, a finding that corroborates the study by Ndiaye A *et al.* in Senegal [11]**,** contrary to many authors who have reported a predominance of males [1] [4] [7] [12]**.**

Furthermore, we noted a close relationship between pain intensity and discomfort. In most cases, the more intense the pain, the greater the discomfort (**Figure 1**). In our study, 82.43% of patients were non-autonomous, compared to 17.57% who were autonomous (**Table 2**). Our results differ from those of Bah AO *et al.* in Guinea [2], who reported 57.30% of patients as dependent. This is consistent with the fact that 52.70% of patients had poor overall health. Regarding limitations due to mental health, 78.4% of our patients claimed to have had difficulty doing their work or any activity, while 91.9% of them had limitations due to physical health. On the other hand, 59.5% of patients had a normal social and relational life. Our results differ from those of Bah AO *et al.* in Guinea [2]**,** who also reported significant limitations due to physical pain, with 63.7% of patients in poor general health and limitations due to mental health in 28.9% of cases in their study. However, they found that 52.1% were completely unable to work due to physical health. With regard to social and relational life, our results were also consistent with those observed in the study by Bah AO [2] (**Table 3** and **Table 4**).

In addition, we noted a close relationship between pain intensity and discomfort. In most cases, the more intense the pain, the greater the discomfort.

In bivariate analysis, dyspnea was significantly associated with poor quality of life ($p = 0.03$), while other factors (age, gender, hypertension, diabetes, hemoglobin levels) were not significant (**Table 5**). In the study by Ranivoharisoa E *et al.* [13]**,** the factors significantly associated with impaired quality of life were: advanced age, length of time on dialysis, irregular sessions, lack of support for care, and alcohol consumption. This result differs from that of Lobna Z *et al.* [14]**,** who found a correlation between the occurrence of impaired QOL and the following nine variables: age > 60 years ($p < 0.001$), marital status of widowed or divorced ($p = 0.005$), rural living environment ($p = 0.001$), educational level not exceeding primary school ($p = 0.002$), low economic status ($p = 0.005$), lack of independence ($p < 0.001$), dialysis three times a week ($p < 0.001$), comorbidities such as diabetes ($p = 0.006$), and anemia ($p = 0.017$). According to some authors [15]-[17]**,** the association between low educational or socioeconomic levels and impaired QoL has been found by several authors [12] [15] [18], who emphasized that a high level of education and socioeconomic status would protect against deterioration in the QOL of hemodialysis patients.

5. Conclusion

The patients, mainly young adults, were mostly dependent, with a predominance of women. Hypertension and diabetes were the most common conditions. Only dyspnea had a significant impact on QOL. Assessing quality of life should therefore be an important objective for nephrologists in the therapeutic management of patients with chronic renal failure.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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