

Quality of Life in Patients with Chronic Heart Failure Followed at the Tertiary Hospitals of Sub-Saharan Africa

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Abstract: Heart Failure (HF) has become one of the most important chronic medical conditions worldwide. It's associated with high morbidity and mortality. Despite improving in patient's management, little works have been done to evaluate the quality of life of patients with heart failure in Sub-Saharan Africa. The objective of this work was to assess the quality of life of patients with Chronic Heart Failure (CHF) followed in three reference hospitals of Cameroon. We carried out a cross-sectional study over a period of 04 months, from January to May 2017. The patients were recruited from the cardiology departments of three references Hospitals of Cameroon: Yaoundé Central Hospital (YCH), General Hospital of Yaoundé (GHY) and Yaoundé University Teaching Hospital (YUTH). We included all patients aged 18 years and above followed for CHF and consenting to participate in the study. Patients with other chronic conditions (chronic kidney disease, cancer, schizophrenia) were excluded. The quality of life was assessed using the Minnesota Living with Heart Failure tool (MLWHF). A total of 119 patients were recruited. The mean age was 66 ± 13 years. More than 2/3 (70.6%) of the patients were unemployed. The majority of patients (83.2%) had low monthly income ($< 100\,000$ FCFA). Stage II of heart failure according to New York Heart Association (NYHA) was the most represented (50 %). The median scores for the Minnesota Living with Heart Failure Questionnaire (MLWHFQ) were generally low. The risk factors of poor life quality were: young age ($p = 0.039$), low educational attainment ($p = 0.046$), low monthly income ($p = 0.024$), exposure to tobacco ($p = 0.005$), low left ventricular ejection fraction ($p = 0.003$), mental depression ($p < 0.001$), anxiety ($p < 0.001$), non-adherence to treatment ($p = 0.035$). The only factors that remain significant after adjusting for confounders are: mental depression (0, 002) and functional class of NYHA ($< 0, 001$). In conclusion, Quality of life is slightly affected in patients with chronic heart failure. The few proportion of alter quality of life is explained mostly by psychological and clinical factors. The clinician should pay attention to these factors for the better management of the patients in Sub-Saharan Africa.

Keywords: Quality of Life, Chronic Heart Failure, Tertiary Hospitals, Sub-Saharan Africa

1. Introduction

Chronic Heart Failure (CHF) is a global public health

problem with high morbidity and mortality [1]. It affected 23 millions of people in the world and 5.8 millions of people in United States; In Europe the prevalence in general population

varying between 0.4 to 2% [2, 3]. The burden in Sub-Saharan Africa is also high; in fact Heart failure accounts for over 30% of hospital admission in specialized cardiovascular units and 3% to 7 % in general internal medicine [4]. CHF is associated with physical, social, psychological complications that affected quality of life which increase the rate of repeat hospitalization and mortality [5]. World Health Organization (WHO) has defined Quality of life (QOL) as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns” [6]. The global prevalence of alter quality of life in CHF is not well describe in the literature because of the heterogeneity of clinical tools of assessment, but among the predictive factors of poor QOL the major determinant is severity of heart failure evaluate by functional NYHA class [6, 7]. Systematic evaluation of QOL in patient with CHF could help to reduce the burden in this population. In Sub-Saharan Africa there is no sufficient data which can be address to the health policy; this fact justified the current study to assess the quality of life of patients with chronic heart failure (CHF) followed in three reference hospitals of Cameroon.

2. Material and Methods

2.1. Study Design, Setting and Participants

We carried out a cross-sectional study over a period of 04 months, from January to May 2017. The patients were recruited from the cardiology departments of three references Hospitals of Cameroon: Yaoundé Central Hospital (YCH), General Hospital of Yaoundé (GHY) and Yaoundé University Teaching Hospital (YUTH). We included all patients aged 18 years and above followed for CHF and consenting to participate in the study. Patients with other chronic conditions (chronic kidney disease, cancer, schizophrenia) and those with incomplete file were excluded. Sample size calculation was done by Cochran formula [8]:

$$N = \frac{Z^2 x P(1 - p)}{d^2} = 85 \text{ patients}$$

N: minimal sample size.

Z: 1.96 for an alpha error of 5%.

P: 0.3 (Prevalence of heart failure in Cameroon found by KINGUE et al in 2004) [9].

D: precision set as 10%.

2.2. Data Collection

Using a structured pilot-tested questionnaire, we briefly interviewed all attended patients in external consultation unit of cardiology department. We collected following socio-demographic data: sex, age, matrimonial status, level of education, ethnic origin, religion, profession, monthly income, and monthly cost of health care and existence of medical insurance. Clinical data concerned: Cardiovascular risk factors such as history of alcohol or tobacco consumption, sedentary lifestyle, obesity defined as a body mass index $\geq 30 \text{ kg/m}^2$,

dyslipidemia, hereditary exposure, duration and etiologies of chronic heart failure, weight, height, body mass index. Severity of heart failure was assessed using the functional class of New York Heart Association (NYHA). The Left Ventricular Ejection Fraction (LVEF) was determining by transthoracic cardiac ultrasonography by using either Teicholz or Simplify Simpson’s formula. Therapeutic data concerned current drugs for heart failure, side effect and compliance. The adherence to treatment was evaluated by Gired questionnaire [10]. Finally, quality of life was assessed by a validated tool: Minnesota Living with Heart Failure (MLHFQ) which analyzes QOL during the last 4 weeks. The MLHFQ is a self-administered disease-specific questionnaire for patients with HF, comprising 21 items rated on six-point Likert scales, representing different degrees of impact of HF on HRQoL, from 0 (none) to 5 (very much). It provides a total score (range 0–105, from best to worst HRQoL), as well as scores for two dimensions, physical (8 items, range 0–40) and emotional (5 items, range 0–25). The maximum score of 105 express as very limited in performing all physical activities, very depressed, tired, with a strong feeling of being a burden to others [11].

2.3. Statistical Analyses

Data were analysed using SPSS version 23.0. Means (standard deviations), medians, interquartile range (IQR) were used to summarize continuous variables, while frequencies and proportions were calculated for categorical variables. Mann Whitney and Kruskal Wallis were used to compare medians. The correlation between value of the MLHFQ score and independent variables were done using linear regression. The statistical significance was set at 5%.

3. Results

3.1. Characteristics of the Study Participants

A total of 119 patients were recruited with female predominance ($n=68$; 58%), Figure 1. The mean age was 66 ± 13 years with range of 20 to 94 years. More than 2/3 (70.6%) of the patients were unemployed. The majority of patients (83.2%) had low monthly income ($<100\,000 \text{ FCFA}$) (Table 1). Hypertension was the major co-morbidity and Stage II of heart failure according to New York Heart Association (NYHA) was the most represented (50%). There were approximately the same proportions of all type of heart failure according to the left ventricular ejection fraction (Table 2).

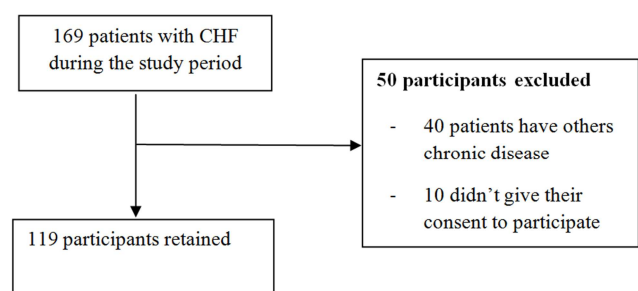


Figure 1. Flow chart of the participants.

Table 1. Demographical and socio-economical characteristics of participants.

Variables		Effective (n = 119)	Percentage (%)
Sex	Female	71	59.7
	Male	48	40.3
Matrimonial status	Married	59	49.6
	Non Married	60	50.4
	Non scalarise	28	23.5
Level of education	Primary	46	38.7
	Secondary	32	26.9
	University	13	10.9
Occupation	Employed	67	56.3
	Unemployed	52	43.7
Monthly salary	≥ 100 000	20	16.8
	< 100 000	99	83.2

Table 2. Clinical and paraclinical characteristics of the population.

Variables		Effective (n = 119)	Percentage (%)
Co-morbid conditions	Hypertension	78	65.5
	Diabetes	10	8.4
	Obesity	21	17.6
	Dyslipidemia	10	8.4
	Cachexia	3	2.5
	Tobacco consumption	3	2.5
Etiologies of CHF	Alcohol abuse	21	17.6
	Hypertensive heart disease	58	48.7
	Myocardiopathy	30	25.2
	Valvulopathy	22	18.5
	Ischemic heart disease	11	9.2
	Others	4	2.4
NYHA class	I	40	33.6
	II	60	50.4
	III	17	14.3
	IV	2	1.7
LVEF	Preserved	42	35.3
	Mid-range	37	31.1
	Altered	40	33.6
Adherence to treatment	Non adherence	14	11.8
	Low adherence	62	56
	Good adherence	43	36

3.2. Assessment of Quality of Life

The median scores for the Minnesota Living with Heart Failure Questionnaire (MLwHFQ) were generally low with a median score of 22 (11 – 42) in this population. Both physical and emotional dimension are concerned (Table 3).

Table 3. Repartition of the population according to the MLwHF score.

Component	Mediane (IQR)	Minimum	Maximum
Physical evaluation	9 (1 – 19)	0	35
Emotional evaluation	8 (4 – 15)	0	24
Total score	22 (11 – 42)	0	73

MLwHF: Minnesota Living with Heart Failure IQR: Interquartile Range.

3.3. Factors Associated with Quality of Life

In univariate analysis, the risk factors of poor life quality were: young age ($p = 0.039$), low educational attainment ($p = 0.046$), low monthly income ($p = 0.024$), exposure to tobacco ($p =$

0.005), low left ventricular ejection fraction ($p = 0.003$), anxiety ($p < 0.001$) and non-adherence to treatment ($p = 0.035$) Table 4. Functional class of NYHA ($< 0, 001$) and mental depression ($p < 0.001$) were the factors which remain significant after adjusting for confounders (Figures 2, 3 and Table 5).

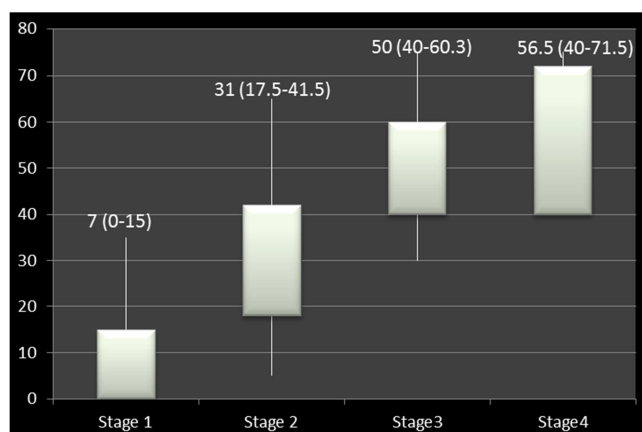


Figure 2. Comparison of the median score of MLwHF according to NYHA class.

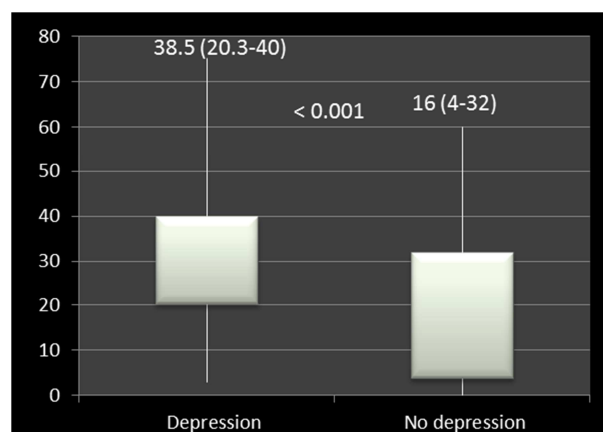


Figure 3. Comparison of median score of MLwHF according to depression status.

Table 4. Factors associated with quality of life in univariate analysis.

Variable	Physical component	Emotional component	Total of MLwHFQ score
Sex			
Female	8 (0 – 16.5)	8 (3.5 – 15)	21 (7.5 – 41)
Male	10.5 (4 – 21)	8 (4 – 14)	23.5 (14 – 47)
P value	0.220	0.897	0.205
Age			
< 68	11 (4 – 21)	8.5 (4 – 15)	31 (12 – 51)
≥ 68	6 (0 – 15)	6 (4 – 15)	17 (6 – 36)
P value	0.039	0.265	0.016
Level of education			
Primary/non scolarised	8 (0 – 16)	8 (4 – 15)	19.5 (7 – 39)
Secondary	13 (6 – 23)	9.5 (4 – 16)	31.5 (14.5 – 51)
University	8 (2 – 16)	6 (2 – 11)	16 (12 – 35.5)
P value	0.046	0.437	0.134
Monthly income			
< 100000	9 (1 – 19)	8 (4 – 15)	24 (10 – 43)
≥ 100000	8 (1 – 16)	6.5 (2 – 11.5)	18 (13 – 35)
P value	0.392	0.024	0.089
Matrimonial status			
Married	11 (3 – 21)	8 (4 – 14)	25 (12 – 47)
Non married	8 (0 – 16)	8 (0 – 16)	18 (8.5 – 39)
P value	0.182	0.727	0.228
Obesity			
Yes	15 (1 – 17.5)	8 (4 – 14)	30 (8 – 42)
No	9 (1 – 19)	8 (4 – 15)	21.5 (11 – 42.5)
P value	0.760	0.772	0.972
Tobacco consumption			
Yes	7 (0 – 13)	18 (8 – 24)	23 (11 – 43)
No	9 (1 – 19)	6 (4 – 11)	19 (4 – 32)
P value	0.905	0.005	0.647
Etiology			
Ischemic heart disease	13 (3 – 16)	10 (5 – 15)	30 (16 – 41)
Non Ischemic heart disease	9 (1 – 19)	8 (4 – 15)	21 (10 – 43)
P value	0.937	0.639	0.572
LVEF			
≥ 45%	14 (5 – 21)	10 (4 – 16)	33 (14 – 50)
< 45%	6 (0 – 13)	6 (3 – 13.5)	16 (8 – 33.5)
Adherence to treatment			
Yes	5 (1 – 11)	6 (4 – 12)	18 (7 – 34)
No	11 (1 – 21)	8 (4 – 16)	36 (11 – 49)
P value	0.035	0.105	0.015

Table 5. Factors associated with quality of life in multivariate analysis.

Independent variable	Total MLWHFQ score	
	B	P value
Age	- 0.047	0.650
Level of education	0.101	0.342
Monthly income	0.012	0.901
Tobacco exposure	0.092	0.324
NYHA stage	0.595	< 0, 001
LVEF	- 0.078	0.567
Mental depression	- 0.363	0.002
Anxiety	- 0.081	0.370
Adherence to treatment	- 0.189	0.061

4. Discussion

Like many chronic disease, chronic heart failure is associated with poor quality of life. This is strongly related to the stage of the disease and some socioeconomic factors [5]. The best tool validate to assess QOL in CHF is the MLWHFQ [11]. Through this tool we have try to describe the quality of life of Cameroonian CHF patient in order to reduce mortality in this population. The quality of life in this population was better comparing to previous studies done [12-14]. This finding can be explained by the fact that many patients were in stage II functional class of NYHA, knowing that severe alteration of functional status is associated with poor quality of life. Another explanation is that the mean age of population was 66 years; in sub Saharan Africa it is rare to reach this age, therefore patients could consider some alteration of their health as normal for the age and therefore reduce the psychological burden.

Potential socio-economic factors of poor life quality found in this study are: young age, low educational attainment, monthly income, these finding are well described in the literature [15-16]. In fact, young people have many projects in their life and the disease constitutes a barrier to realize their objectives so they could develop psychological problem which may alter quality of life. Low financial resources are also a great component of poor quality of life by reducing access to health care like demonstrate a several studies [17]. This lack of money with psychological problem can also explain non-adherence to treatment which are found as a determinant of QOL.

After adjusting for all confounding factors we realized that only functional class of NYHA and depression were linked to the quality of life. This finding is similar to previous studies, [13, 16, 18-21]. In fact with permanent dyspnea patients are unable to work and lost their autonomy which contributes to alter their life quality. In the same extend this lost of autonomy can result to depression which further aggravate the disease. In order to improve quality of life we have to reduce progression of the disease to severe functional class and screening all CHF patients for depression.

5. Conclusion

Quality of life of CHF patient in Cameroon is relatively better than other population. Some cultural factors may

explain this finding. For those who have poor life quality, the major determinants are severity of the disease and depression. Knowing that it is sometimes difficult to reduce de progression of the disease in all patients, it is important to screen all CHF patients for depression in order to give better quality of life to this patient.

List of Abbreviations

CHF	Chronic Heart Failure
GHY	General Hospital of Yaoundé
HF	Heart Failure
IQR	Interquartile Range
LVEF	Left Ventricular Ejection Fraction
MLWHFQ	Minnesota Living with Heart Failure
NYHA	New York Heart Association
QOL	Quality of Life
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization
YUTH	Yaoundé University Teaching Hospital

Declarations

Ethics approval and consent to participate: Ethical approval was obtained from the Institutional Review Board of the Faculty of Medicine and Biomedical Sciences, University of Yaoundé I. Also, administrative authorization was obtained from the Directors of the General Hospital of Yaoundé, Central Hospital of Yaoundé and Yaoundé University Teaching Center prior to the start of the study. Written informed consent was obtained from all study participants who part took in this study.

Availability of Data and Materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

JB, JPOK, LMK, DE, AM and SK: study conception and

design, data collection and analysis, interpretation of results. Manuscript writing and critical revision: JB, MT. All the authors read and approved the final version of the manuscript.

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