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Hemodialysis Patients' Satisfaction and Associated Factors in National Teaching Hospital Hemodialysis Center, Cotonou (Benin)

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Abstract

Background: Patients' satisfaction is a relevant component in assessing healthcare services. The objective of this study was to study the level of satisfaction of chronic hemodialysis patients and the associated factors in Cotonou CNHU-HKM dialysis center. **Patients and Methods:** It was a cross-sectional, descriptive and analytical study conducted by administering a questionnaire on days off dialysis. It was carried out from 1st November 2015 to 1st January 2016 in CNHU-HKM Nephrology University Clinic of Cotonou. Hemodialysis patients aged 18 years and above having given their informed consent were included in the study. Patients' recruitment was comprehensive. Likert scale was used in assessing the level of satisfaction with 4 as "very satisfied" and 1 for "very dissatisfied". Satisfaction was evaluated on the basis of Ware dimensions. The threshold for satisfaction was 50. **Outcomes:** Overall, 377 patients were included in the study. Respondents' mean age was 51.5 ± 13.3 years with 1.37 as sex ratio. Arteriovenous fistula was used for 80.1% of hemodialysis patients. 77.7% of the patients underwent dialysis twice a week while 45.9% were administered a four-hour dialysis. The overall average proportion of "satisfied" was 76.5%. The level of satisfaction was 52% for healthcare environment, 61% for service delivery, 73.9% for healthcare accessibility, 76.1% for healthcare structure, 77.5% for healthcare management, 90.3% for quality of healthcare, 88.3% for interpersonal relationship and 93.2% for efficiency and continuum of healthcare. Factors associated with satisfaction included age (p = 0.02), vascular access (p = 0.04) and urea reduction ratio (p = 0.01). In addition, the degree of satisfaction of hemodialysis patients was not

statistically associated with sex, marital status, educational level, history of the disease, age of dialysis, number of sessions per week, and duration per session. **Conclusion:** The overall level of hemodialysis patients' satisfaction is above average. There is a need to particularly focus on healthcare environment, so as to better improve the level of satisfaction.

Keywords

1. Introduction

Chronic Kidney Disease (CKD) is a devastating disease. It is quite often asymptomatic at the start and only reveals itself at end stage, thereby requiring replacement therapy [1]. CKD is treated through hemodialysis or peritoneal dialysis to mitigate impaired renal function and relieve the patient, without pretending to cure patients [2]. Dialysis is more common on other continents than in Africa. In 2005 the frequency of dialysis in the United States was estimated at 311 per million individuals per annum [3]. According to the World Health Organization (WHO), eight million individuals will need dialysis by 2025 [4]. In most countries, patients are placed on dialysis without seeking neither their opinion nor their level of acceptance and satisfaction. However, patients' opinion helps provide data on the ability of health professionals to effectively address their values and expectations [5]. The literature focuses on the level of patients' satisfaction which is regarded as a performance indicator for hospitals and health care programs [6].

Patient associations are created and fight to ensure that services rendered to patients are of high quality and meet their expectations [7]. In most countries, hemodialysis is a treatment that the patient undergoes without asking about his opinion, his level of acceptance or satisfaction. However, the patient's participation through his point of view is a relevant indicator of the quality of care for hemodialysis patients. This quality of care could guarantee an acceptable quality of life. The intervention of the patient in the medical decisions concerning him is essential for some years as an evidence and even more in the patient in chronic renal insufficiency under hemodialysis. It provided data on the ability of health professionals to respond effectively to patient values and expectations [8]. Since 1997, several satisfaction studies have been carried out, particularly in the general population, among hospitalized patients or patients in specialized consultations. A survey conducted in 2004 in the 12 structures of Lorraine (France) estimated overall satisfaction at 73.3% in hemodialysis with variability from one medical team to another [6]. In Africa, the first data from the Moroccan national dialysis register "Magredial" estimated in 2004 the prevalence of chronic end stage renal failure (CRTI) treated by hemodialysis at 162 per million inhabitants [9]. The level of such indicator is useful in identifying shortcomings in health

services and undertaking adequate steps for improved healthcare quality [10]. In Benin, no scientific study has ever been conducted on the satisfaction of dialysis patients, hence the need for this study to assess the level of patients' satisfaction in CNHU-HKM hemodialysis center.

2. Framework and Methods

It was a cross sectional, descriptive and analytical study conducted over three months, from 1st November 2015 to 1st January 2016. The study population comprised all patients undergoing hemodialysis during the study period in CNHU-HKM Cotonou public dialysis center.

Individuals included in the study were hemodialysis patients aged 18 years and above, undergoing at least a three-month hemodialysis, able to answer questionnaire, and having given their informed consent. Patients who have been undergoing hemodialysis for less than three months, individuals suffering from acute kidney injury or those unable to answer the questionnaire were all excluded.

It was a comprehensive sampling which integrated all patients meeting inclusion criteria.

Satisfaction stands out as the dependent variable. Likert scale was used for assessing the level of satisfaction with 4 as "very satisfied", 3—"quite satisfied"; 2—"somewhat dissatisfied" and 1—"very dissatisfied" [11]. Pooling was conducted and scores 3 and 4 were considered "satisfied" while 1 and 2 were "dissatisfied". Patients' satisfaction was assessed on the basis of Ware dimensions while integrating our cultural background [10]. The relevant dimensions were: interpersonal relationships, technical quality of healthcare, healthcare accessibility, physical environment of healthcare, efficiency and healthcare continuum, availability and delivery of service. The threshold of satisfaction was 50. Independent variables included socio-demographic (age, sex and level of education), clinical (personal history and current health status) and hemodialysis related data (vascular access, seniority in dialysis, number of weekly session, duration of each session and urea reduction ratio). These data were collected during one-on-one interview on days off dialysis. Regarding unschooled patients, an iconography was used to gather their opinion based on various scores. Data entry and analysis was carried out with Epi Info version 7. Likert scale scores were analyzed by computing the ratio of each satisfaction dimension. Distribution tables were then developed through computing. Next, we clustered in two categories "dissatisfied" (somewhat dissatisfied and very dissatisfied) and "satisfied" (quite satisfied and very satisfied) the four initial categories of satisfaction. We computed the proportion of satisfied patients in each sub item. Thereafter, we calculated the average proportions of satisfied patients per each category, then we figured the average patients' averages to obtain the overall satisfaction. Chi squared test was used to compare "satisfied" and "dissatisfied" patients. The study was approved by the Technical Medical Board of selected hemodialysis units. Anonymity and confidentiality of data were maintained in line with ethi-

cal principles for medical research involving human subjects as outlined in the World Medical Association Declaration of Helsinki [12].

3. Outcomes

During the study period, 392 hemodialysis patients met our criteria, however, 15 were excluded among which nine men. Overall, 377 patients were included in the study, representing 96.2%.

3.1. Socio-Demographic Features

Respondents' mean age was 51.5 ± 13.3 years (extreme values estimated at 19 and 79 years). Most respondents were between 55 and 64 years (28.6%). Men outnumber women in a proportion of 57.8% with 1.37 as sex ratio. In our study, 166 (44.0%) hemodialysis patients had high school education.

3.2. Clinical Features

HBP history was prevalent, with 81.2% frequency against 22.5% for diabetes. 80.1% of respondents had their arteriovenous fistula functioning properly. 293 (77.7%) had two dialysis sessions on weekly basis. Regarding duration, 173 (45.9%) patients underwent a four-hour dialysis. Seniority in dialysis ranged from 5 to 10 years in 138 (36.6%) respondents. Urea reduction ratio is greater than 60% for 313 (83%) patients (Table 1).

3.3. Hemodialysis Patients' Satisfaction

The overall average proportion of satisfied patients was 76.5%. Figure 1 highlights the distribution of the average proportion of satisfied patients per each dimension.
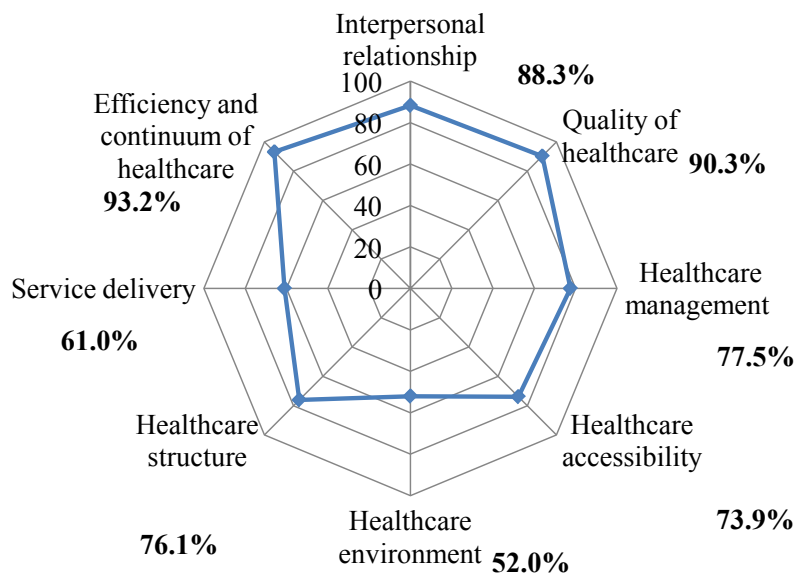

Figure 1. Distribution of satisfied patients' average proportion per each dimension, CNHU-HKM Cotonou dialysis center, 2016.

Table 1. Patients' distribution per socio-demographic, clinical and dialysis features in CNHU-HKM Cotonou dialysis center, 2016.

	Size (n = 377)	(%)
History		
Diabetes	85	22.5
High Blood Pressure	306	**81.2**
Other	12	3.18
No	08	2.12
Seniority in dialysis (years)		
<2	35	9.3
2 - 5	96	25.5
5 - 10	138	**36.6**
>10	108	28.6
Number of weekly dialysis session		
2	293	**77.7**
3	84	22.3
Duration per dialysis session		
4 h	173	**45.9**
4 h 30	72	19.1
5 h	132	35.0
Vascular access		
Arteriovenous fistula	302	**80.1**
Urea reduction ratio		
≥60	**283**	75.1

3.4. Hemodialysis Patients' Opinions on Interpersonal Relations in Healthcare, Quality of Service and Healthcare Management, Efficiency and Continuum of Healthcare

The majority of hemodialysis patients (89.4%) were quite satisfied with the nephrologist interaction with them. With regard to accuracy of the information provided by the nephrologist and confidentiality during the clinical examination, hemodialysis patients were very satisfied in a proportion of 94.2% and 92% respectively. Concerning the nephrologist's care and attention, the way he ensures the accuracy of the quantity of dialysis received, the quality management of new medical issued by the dialysis center and the quantity of fluid extracted during a dialysis session, hemodialysis patients were very satisfied in a proportion of 87.8%, 87%, 85.9% and 80.9% respectively. Regarding coordination of care between the nephrologist and other doctors, the response from the dialysis center in cases of distress or worries, and information provided about the required quantity of fluid intake within dialysis sessions, hemodialysis patients were very satisfied in a proportion of 66.8%, 84.4% and 88.6% respectively. As

for information provided on dialysis 44.6% of hemodialysis patients were rather satisfied. Information provided by the nephrologist to hemodialysis patients were considered satisfactory (85.1%). The majority of hemodialysis patients (98%) recommended the dialysis center to their acquaintances or relatives suffering from the same disease. Table 2 highlights hemodialysis patients' classification according to their opinions about interpersonal relationship in healthcare, quality of service and healthcare management, efficiency and continuum of healthcare.

3.5. Opinions of Hemodialysis Patients on Access to Healthcare, Care Environment, Healthcare Structure and Service Delivery

In our study, 77% of hemodialysis patients were satisfied with the easy access in contacting the nephrologist. Hemodialysis patients were very satisfied with the availability and accessibility to the hemodialysis center in a proportion of 72.42% and 83.6% respectively. Moreover, 87.8% of them were pleased with having

Table 2. Hemodialysis patients' distribution per their opinion on interpersonal relationships in healthcare, quality of service and healthcare management, effectiveness and continuum of healthcare in CNHU-HKM Cotonou dialysis center, 2016.

	Very dissatisfied		Somewhat dissatisfied		Quite satisfied		Very satisfied	
	N	%	N	%	N	%	N	%
Interpersonal relationship in healthcare								
Nephrologist mood	0	0.0	25	6.6	337	**89.4**	15	3.9
Hygiene measures	1	0.3	48	12.7	303	**80.4**	25	6.6
Support and care	1	0.3	48	12.7	303	**80.4**	25	6.6
Staff friendliness	1	0.3	52	13.8	299	**79.3**	25	6.6
Quality of healthcare								
Care provided by the nephrologist	4	1.1	22	5.8	331	**87.8**	20	5.3
Nephrologist information	0	0	14	3.7	355	**94.2**	8	2.1
Dialysis technique	0	0	44	11.7	328	**87.0**	5	1.3
removing excess water	3	0.8	64	17.0	305	**80.9**	5	1.3
Other health issues	4	1.1	42	11.1	324	**85.9**	7	1.9
Privacy	0	0.0	23	6.1	347	**92.0**	7	1.9
Healthcare management								
Healthcare coordination	9	2.4	61	16.2	252	**66.8**	55	14.6
Dialysis center responsiveness	0	0	48	12.7	318	**84.4**	11	2.9
Information on dialysis	22	5.8	168	**44.6**	158	41.9	29	7.7
Quantity of fluid intake in-between dialysis sessions	3	0.8	29	7.7	334	**88.6**	11	2.9
Effectiveness and continuum of healthcare								
Accuracy of nephrologist information	1	0.3	55	14.6	312	**82.7**	9	2.4
Better healthcare measures	0	0.0	1	0.3	170	45.1	206	**54.6**
Dialysis center recommendation	0	0.0	8	2.1	354	**93.9**	15	4.0

access to the patient's file. However, 48.3% of patients were dissatisfied with the frequency of the nephrologist visit. As for the physical environment of health-care, only 18.5% expressed satisfaction with safe handling and movement equipment, 43% with dialysis bed or chair; but over half of them were satisfied with the provisions of transport and furniture in the waiting-room. Respondents were satisfied with dialysis room lighting and space in a proportion of 91.5% and 88.6% respectively. Concerning cleanliness of the premises, 50.6% of patients were satisfied. With respect to the dialysis center opening hours and noise, they were satisfied in a proportion of 77.5% and 82.8% respectively. For snack, 76.2% of patients expressed dissatisfaction. Table 2 and Table 3 highlight hemodialysis

Table 3. Hemodialysis patients' distribution per their opinion on healthcare accessibility, physical environment of healthcare, service delivery, and healthcare structure in CNHU-HKM Cotonou dialysis center, 2016.

	Very dissatisfied		Somewhat dissatisfied		Quite satisfied		Very satisfied	
	N	%	N	%	N	%	N	%
Access to healthcare								
Nephrologist accessibility	13	3.5	71	18.8	267	**70.8**	26	6.9
Frequency nephrologist visit	14	3.7	182	**48.3**	160	42.4	21	5.6
Dialysis center accessibility through phone call	13	3.5	71	18.8	267	**70.8**	26	6.9
Dialysis center responsiveness in the event of emergency	1	0.3	61	16.2	312	**82.8**	3	0.8
Dialysis center accessibility	1	0.3	103	27.3	264	**70.0**	9	2.4
Access to patient's file	2	0.5	34	9.0	312	**82.8**	19	5.0
Overall quality of healthcare	0	0.0	113	30.0	241	**63.9**	23	6.1
Healthcare environment								
Equipment facilitating movement and handling	64	17	243	**64.5**	70	18.5	0	0.0
Transport	1	0.3	111	29.4	264	**70.0**	1	0.3
Dialysis bed or chair	18	4.8	207	**54.9**	148	39.3	4	1.0
Access and quality of dressing room	13	3.4	129	34.2	234	**62.1**	1	0.3
Comfort waiting room furniture	1	0.3	117	31.0	255	**67.6**	4	1.1
Healthcare structure								
Dialysis room space	0	0.0	43	11.4	333	**88.3**	1	0.3
Lighting in patient rooms	0	0.0	33	8.8	341	**90.5**	3	0.8
Rooms temperature	0	0.0	98	26.0	256	**67.9**	23	6.1
Rooms cleanliness	10	2.7	176	46.7	180	**47.7**	11	2.9
Service delivery								
Dialysis center opening hours	0	0.0	85	22.5	285	**75.6**	7	1.9
Noise dialysis room	2	0.5	63	16.7	306	**81.2**	6	1.6
Snack	61	16.2	230	**61.0**	85	22.5	1	0.3

patients' classification according to their opinion on access to healthcare, the environment, service delivery, and healthcare structure in CNHU-HKM Cotonou dialysis center, 2016.

3.6. Identification of Factors Associated with Hemodialysis Patients' Satisfaction

Patients' satisfaction was statistically associated with age (p = 0.02), vascular access (p = 0.04) and urea reduction ratio (p = 0.01). However, sex (p = 0.59), marital status (p = 0.86) educational level (p = 0.79), history of the disease (p = 0.44), seniority in dialysis (p = 033), number of weekly session (p = 0.55) and the duration per each session (p = 0.74) were not statistically associated with hemodialysis patients' satisfaction. Table 4 and Table 5 outline the relationship between socio-demography, clinical, dialysis features and the level of patients' satisfaction in CNHU-HKM Cotonou dialysis center, 2016.

Table 4. Factors associated with the level of patients' satisfaction in CNHU-HKM Cotonou dialysis center, 2016.

	Dissatisfied		Satisfied		P
	n	%	n	%	
Age					**0.02**
<45	69	60.5	45	39.5	
45 - 65	88	44.0	112	56.0	
>65	30	47.6	33	52.4	
Vascular access					**0.04**
central venous catheter	39	52.0	36	48.0	
Arteriovenous fistula	121	40.1	181	59.9	
Urea reduction ratio					**0.01**
<60	29	30.9	65	69.1	
≥60	131	46.3	152	53.7	

Table 5. Factors not associated with the level of patients' satisfaction in CNHU-HKM Cotonou dialysis center, 2016.

	Dissatisfied		Satisfied		P
	n	%	n	%	
Marital status					0.86
Married	120	42.7	161	57.3	
Unmarried	40	41.7	56	58.3	
Educational level					0.79
Unschooled	16	44.4	20	55.6	
Schooled	144	42.2	197	57.8	
History					0.44

Continued

Diabetes	40	47.1	45	52.9	
HBP	127	41.5	179	58.5	
Age (years)					0.33
<5	60	45.8	71	54.2	
≥5	100	40.7	146	59.3	
Number of dialysis session					0.55
2	122	41.6	171	58.4	
3	38	45.2	46	54.8	
Duration of dialysis session					0.74
<4 h	75	43.4	98	56.6	
≥4 h	85	41.7	119	58.3	

4. Discussion

Our study was the first ever conducted on patients' satisfaction in CNHU HKM hemodialysis center.

The study was conducted in a single dialysis service limiting the lack of homogeneity of practices responsible for bias indication and difference of practices. Certainly, the complexity of the measurement of satisfaction has led to the existence of several dimensions and measurement tools. We chose the Ware model validated and used in several other works to limit information bias [10]. The questionnaires were written in French while some people in the study population were out of school leading to the use of information images. Translating questions and images into local languages could possibly lead to information bias. It could have been translated into language and then translated back into French to check the tool's accuracy.

The overall average score of satisfied hemodialysis patients was 76.5%. This score is higher than 63.3% reported by Nguyen Thi [13]. This could be explained by sampling size and the monocentric nature of our study.

4.1. Patients' Opinion on the Various Dimensions

In our study, satisfaction with interpersonal relationship in healthcare services is much better with the doctor than with allied health professionals. A survey conducted in Brazzaville [14] reported good hemodialysis patients' relationship with doctors, which is consistent with that of our study. Some other patients are satisfied with neither doctors nor allied health professionals, which suggests an inferiority complex due to their disease influencing their judgment towards caregivers as shown in several literatures [15] [16] [17].

The proportion of patients satisfied with respect for their privacy by health workers in our study is lower than that of the study conducted in Lyon, France in 2010 [18]. This variance may be due to the strict compliance with privacy in France unlike African countries such as Benin. In addition, results reported in

France revealed quicker reactiveness in hemodialysis patients management than in our study [18]. This is probably related to the highly developed technical facilities and the conscientiousness in the provision of healthcare in developed countries.

Over four out of six hemodialysis patients expressed positive opinion on the coordination of healthcare activities in the dialysis unit. According to them, the dialysis unit met their care needs. This result is consistent with the records contained in a study conducted in France in 2012 [19].

In our study, the level of satisfaction in terms of the dialysis center's readiness to assist you in case of emergency is higher than the one reported in Dakar in 2015 [20]. The frequency of the nephrologist visit to the center is globally low [13], and even lower in our study. This is explained by the fact that the dialysis center is open 24 hours weekly for dialysis sessions yet, patients want the nephrologist to often pay then a visit. The point is that, apart from attending to the dialysis center, the nephrologist carries out training and researches which require to spend time away from his patients. According to respondents, access to dialysis patient's file was satisfactory. These observations are similar to the results recorded in the Dakar study [20]. The comfort of the dialysis bed or chair disappointed patients who expressed dissatisfaction. This dissatisfaction is also expressed for equipment used for moving and handling dialysis patients. Their opinion improved a bit on dressing rooms and furniture provided in the waiting room. Moreover, they expressed satisfaction on the dialysis room lighting and space. This finding is consistent with the study conducted in Dakar; the setting is approved by the vast majority of patients certainly because it meets the minimum standard of comfort [20]. On the other hand, the level of satisfaction for cleanliness of the premises is much lower than data reported in a study carried out in France in 2012 [19]. This reflects poor departmental head supervision of the caregivers responsible for cleaning rooms after each dialysis sessions. In fact, the supervisor should instill discipline.

Over three quarters of the patients said they were satisfied with the dialysis center's opening hours and the sound and peaceful atmosphere in the room. Less than quarter of them were satisfied with the snack. These results are similar to the observation in many studies in Africa [16] [17] where food plays an important role culturally.

4.2. Factors Associated with Hemodialysis Patients' Satisfaction

There was a statistically significant relation between the age of dialysis patients and the level of satisfaction (p = 0.02). Older respondents express a higher level of satisfaction. This finding is similar in many studies [21] including that of Nguyen Thi *et al.* [13]. This could be explained by the fact that the levels of care expected are different according to age [22], and also due to the fact that in the African culture we show a lot of respect and care towards elderly people.

Satisfaction is also associated with vascular access (p = 0.04); patients with ar-

teriovenous fistula are more satisfied. The use of arteriovenous fistula has been a common practice in several studies [10] [20] as is convenient for many patients, certainly because it reduces the risk of infection unless patients with central venous catheters much more exposed [22].

Urea reduction ratio (URR) is statistically related to satisfaction (p = 0.01). The better the URR, the more satisfied patients are. In other studies, including that of Kane *et al.* [23], the current health status is also associated with satisfaction. Patients would be more easily focused on their current health status in relation to the care they have been provided [10].

5. Conclusion

The overall level of satisfaction expressed by hemodialysis patients exceeds the average. There is a need to particularly focus on the quality of healthcare for better management of hemodialysis patients. Patients' satisfaction should be assessed more often as it is the true indicator of hospital performance.

Conflicts of Interest

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

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