Morbid Association of Anxiety and Depressive Disorders among Hemodialysis Tropical Patients

Komi Assogba*[1], Kokou M Soedje[5], Kossivi M Apetsè[2], Akomola K Sabi[7], Boubounè K Kota-Mamah[6], Abdullah Blakime, Kolou Dassa[4], Koffi AA Balogou[3]

[1*]*Professor of Neurology, Campus teaching hospital of Lomé, Togo*

[2]*Assistant Professor of Neurology, Campus teaching hospital of Lomé, Togo*

[3]*Senior Professor of neurology, Campus teaching hospital of Lomé, Togo*

[4]*Senior Professor of Psychiatry, Campus teaching hospital of Lomé*

[5]*Assistant Professor of Psychiatry, Campus teaching hospital of Lomé*

[6]*Psychiatry department, Campus teaching hospital of Lomé, Togo*

[7]*Assistant Professor of Nephrology, Campus teaching hospital of Lomé, Togo*

ABSTRACT

Chronic renal failure is a gradual and irreversible deterioration of the kidney's ability to filter blood and excrete wastes from body inside. Hemodialysis is an extra-renal technic of body purification. **Objective:** To determine the anxiety and depressive indicators and their contributing factors. **Subjects and methods** It was a prospective single-use and cross-sectional study with a descriptive and analytical focus, including subjects with stabilized clinical symptoms and no psychiatric history, who undergoing periodic hemodialysis treatment. The psychological assessment was done through the HADS. **Results** The mean age of patients was 46.51 ± 14.41 years with male predominance. The patient average durability in hemodialysis was 44.44 ± 43.45 months. The average duration of chronic renal failure (CRF) progression before dialysis was 9.16 ± 14.50 months. A total of 31.87% patients had no anxiety state (A1 group), 28.57% had a suspicious anxiety state (A2) and 39.56% were anxious (A3). Concerning the depressive group, 37.36% had no depressive state (D1), 20.88% had a doubtful depressive state (D2) and 41.76% had a certain depressive state (D3). The risk factor of anxiety disorder in chronic hemodialysis were female sex ($p = 0.03$), trade and reseller profession ($p = 0.04$), shame and stigma of chronic hemodialysis ($p = 0.02$), and lack of social security ($p = 0.004$). The factors that contribute in developing CRF before dialysis were high blood pressure in 68.13% followed by self-medication in 37.36% and infusion in 31.87%. **Conclusion** The prevalence of anxiety and depressive disorders is frequent in periodic hemodialysis patients. There is a current need of psychological support to improve the quality of life of these patients.

INTRODUCTION

Chronic kidney disease (CKD) is a global challenge and affects 8–16% of the adults worldwide. About 500,000 individuals will develop end-stage-kidney-disease (ESKD) every year. The prevalence of this debilitating disease is projected to increase further due to the diabetes and hypertension epidemic, and self-medication. [1-6]

There are five stages of CKD, measured using a test of glomerular-filtration-rate (GFR). The stage- 5 of CKD or ESKD marks kidney failure. In this final stage, renal replacement therapy (RRT) such as hemodialysis, peritoneal dialysis or kidney transplantation becomes necessary to maintain life. [7-9]

High levels of anxiety and depression are well known to affect 25-71% of hemodialysis patients.[10-12] Depressive and anxiety symptoms are important factors for reducing treatment adherence, affecting prognostic outcome, impaired functional capacity, higher rates of hospitalization, poor quality of life (QoL), and earlier mortality.[13,14] These disorders are attributed to the disabling and painful nature of the disease and its socio-economic and cultural handicaps, associated to psychosocial and biologic changes that accompany dialysis.[15,16]

The patients suffer for years enduring discomfort and disruption to life as they spend hours undergoing dialysis treatments as long as they still alive. Patients are required to make ongoing psychological adjustments over the course of their disease. [5,8,9]

The context is quite particular in the tropical setting according to the illness socio-cultural representatives marked by the experience of being connected to mechanical machines several times a week. [17-19]

The objective was to determine the anxiety and depressive disorders and their contributing factors among CKD patients.

PATIENTS AND METHODS

The study was conducted in the nephrology department of our tertiary hospital. This service has two common rooms with a total capacity of 16 beds for 11 functional dialysis stations. The consultation and the follow-up of patients are ensured by three nephrologists and one psychologist. The paramedic and support staff assist the medical team in monitoring patients. It is the only national hemodialysis center for the whole country.

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A prospective cross-sectional, once-through, descriptive and analytical study, was carried out from January to June 2017. All chronic hemodialysis patients for at least one month who gave their informed consent were included regardless the age, sex or nationality.

Subjects not included were patients with psychiatric pathology for any diagnosis and those with a cognitive disorder. Data collection was provided by a doctoral student in medicine. The survey sheet has been pre-established and standardized in semi-directive interviews.

Each patient was seen after his dialysis session and by appointment, to whom we explained the purpose of the study. The survey sheet included sociodemographic variables, clinical and therapeutic data on kidney failure disease, and assessment of anxiety and depressive symptoms. To evaluate anxiety and depressive disorders, we have used the psychometric test of Zigmond and Snaith (Hospital Anxiety and Depressive Scale, HADS). The HADS over many other tests is easy to apply for self-evaluation, and the most useful test that contain more items regarding anxiety and depression symptoms. The HADS is a questionnaire consisting of 14 items including seven (7) items intended for exploring anxiety symptoms and seven (7) items for depressive symptoms. Each item is rated from 0 to 3 depending on the severity of the symptoms. A score under 8 corresponds to an absence of anxiety (Group A1) and depression (Group D1), a score between 8 and 10 corresponds to a possible anxiety state (Group A2) or possible depression (Group D2), and a score above 10 corresponds to a certain anxiety state (Group A3) or certain depression state (Group D3). The pre-survey was conducted after basic training in nephrology and psychiatry to pass the test. For patients who did not understand french, the questions were translated to local language as the evaluation progressed. The selected patient met the diagnostic criteria of DSM-IV. The blood tests for hemogram, uremia, creatinine and water electrolytes balance were normal. The tests had helped to exclude symptoms due to minerals imbalance. All clinical investigations and other associated measures were taken to remove confounding factors such as uremia level and electrolytes balance, where the physical symptoms closely mimic depression. The diagnosis of chronic renal failure was based on glomerular filtration rate values. These values range from 90ml / min to 29ml / min and classify chronic kidney disease into 5 stages. The stage 5 of CKD needs renal replacement therapy (RRT) to maintain life. Data analysis was focused on explanatory and explained variables. Data processing was done with Epi Info7 software. It included the calculation of averages, minima, maxima and standard deviation. Chi-square, Fischer, and Pearson tests, and univariate analysis of variance were used. The threshold of significance was set at $p < 5\%$.

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RESULTS

The number of patients treated with periodic hemodialysis was 91 and had participated in the study. The mean age was 46.51 years old with a standard deviation of 14.41 and extremes of 11 and 84 years. The age group of 40 to 59 years was the most represented with 48.35% followed by that of 20 to 39 years in 30.77% (Figure1).
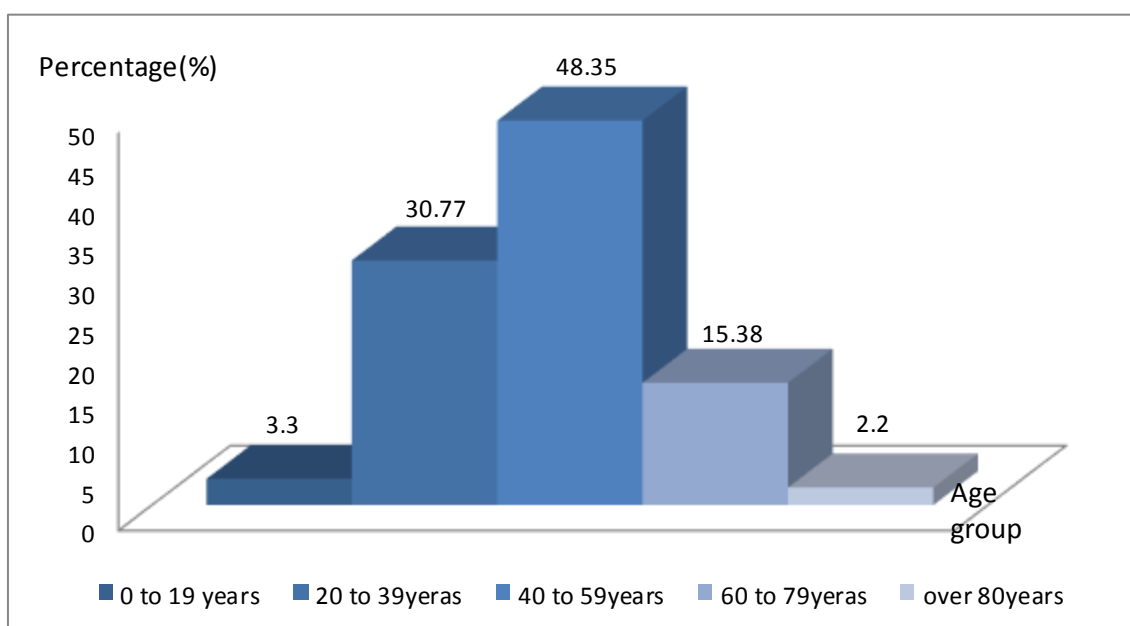

Figure 1: Repartition of patients by age range

The male sex predominated with 56 patients (61.54%). The female sex was associated with the occurrence of anxiety disorders (p = 0.03). The relative risk of anxiety was increased threefold for female dialysis patients (RR = 2.6). High blood pressure was the main risk factor in 68.13% followed by self-medication in 37.36% and infusion in 31.87%. **Table** I had shown the prevalence of anxiety and depressive disorders.

Table I: Prevalence of anxiety and depression

	Number(n)	Percentage(%)
Anxiety		
A3(Certain Anxiety)	36	39.56
A1(Absence of anxiety)	29	31.87
A2(Possible anxiety)	26	28.57
Depression		
D3(Certain depression)	38	41.76
D1 (Absence of depression)	34	37.36
D2 (Possible depression)	19	20.88

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Of the psychopathological indicators, 39.56% of the subjects were anxious type A3 and 41.76% depressed type D3. A3 anxiety subjects were women in 52.8% and 63.2% of D3 depressed patients were men. Of the 93.41% educated, 50.55% had a secondary and 26.37% were higher education level. Patients with secondary and university education level were represented in the anxiety group, with 50% and 27.8%, respectively, and in the depressed group, with 47.4% and 34.2% respectively.

Concerning the profession, 68.13% had lost their job, of which 72.2% were anxious and 79% were depressed. Among unemployed subjects, 65.93% did not have health insurance. The subjects without health insurance were anxious in 55.9% and depressed in 73.7%. The absence of social security system multiplies by 3 the risk of occurrence of anxiety disorders (RR = 2.6, p = 0.04). The profession of seller was associated with the occurrence of anxiety disorders (p = 0.04).

The risk of developing anxiety increased fourfold among traders (RR = 3.6), and patients with profound cultural concerns (RR=3.7, p=0.03). According to the family status, 71.43% of hemodialysis patients (75% of the anxious and 65.8% of the depressed) were married and 47.25% had between 1 and 3 children. Among them, 87.91% lived with the family, 80.22% were accepted and supported by their families, and 58.24% received family financial assistance (**Table** II).

Table II: Distribution of patients according to demographic and socio professional items

	Anxiety			Depression		
	A1 n(%)	**A2 n(%)**	**A3 n(%)**	**D1 n(%)**	**D2 n(%)**	**D3 n(%)**
Sex F	9(31)	8(30.8)	19(52.8)	13(38.2)	9(47.4)	14(36.8)
Sex M	20(69)	18(69.2)	17(47.2)	21(61.8)	10(52.6)	24(63.2)
Instruction						
Uneducated	1(3.5)	2(7.7)	3(8.3)	1(2.9)	3(15.8)	2(5.3)
Primary	1(3.5)	3(11.5)	5(13.9)	3(8.8)	1(5.3)	5(13.2)
Secondary	13(44.8)	15(57.7)	18(50.0)	19(55.9)	9(47.4)	18(47.4)
University	14(48.2)	6(23.1)	10(27.8)	11(32.4)	6(31.6)	13(34.2)
Marital Status						
Married	22(75.9)	16(61.5)	27(75.0)	23(67.7)	17(89.5)	25(65.8)
Not married	7(24.1)	10(38.5)	9(25.0)	11(32.3)	2(10.5)	13(34.2)
Social security						
Insured	17(58.6)	7(26.9)	8(22.2)	15(44.1)	7(36.8)	10(26.3)
Uninsured	12(41.4)	19(73.1)	28(77.8)	19(55.9)	12(63.2)	28(73.7)
Family living						
With family	24(82.8)	25(96.1)	31(86.1)	30(88.2)	17(89.5)	33(86.8)
Single	5(17.2)	1(3.9)	5(13.9)	4(11.8)	2(10,5)	5(13.2)
Employment						
Seady job	15(51.7)	4(15.4)	10(27.8)	16(47.1)	5(26.,3)	8(21)
Job lost	14(48.3)	22(84.6)	26(72.2)	18(52.9)	14(73.7)	30(79)

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The mean duration of progression of kidney insufficiency prior to hemodialysis was 9.16 months with extremes of 1 and 84. This duration was less than 6 months in 66.7% of the anxiety subjects and 73.7% of depressed subjects. The average lifetime in hemodialysis was 44.45 months with extremes of 1 and 151. The average length of life in hemodialysis was greater than 6 months in 77.8% of the anxious and 76.6% of the depressed patients. The duration of renal failure, less than 6 months was associated to the onset of depression (p = 0.04) (**Table** III). The relative risk of occurrence of depressive episodes was multiplied by 3 (RR = 2.7). No demographic, socio-occupational and clinical factors were associated with the onset of depression and anxiety (p> 0.05).

Table III: Repartition of anxiety and depression according to the duration before and during hemodialysis

	Anxiety			**Depression**		
	A1 n(%)	**A2 n(%)**	**A3 n(%)**	**D1 n(%)**	**D2 n(%)**	**D3 n(%)**
Chronic disease						
Yes	23(76.7)	24(92.3)	25(71.4)	25(73.5)	16(84.2)	31(81.6)
No	7(23.3)	2(7.7)	10(28.6)	9(26.5)	3(15.8)	7(18.4)
Duration of CKD* before dialysis						
<6months	14(48.3)	18(69.2)	24(66.7)	17(50)	11(57.9)	28(73.7)
≥6months	15(51.7)	8(30.8)	12(33.3)	17(50)	8(42.1)	10(26.3)
Durability in hemodialysis						
< 6months	5(17.2)	5(19.2)	8(22.2)	6(17.6)	3(15.8)	9(23.4)
≥ 6months	24(82.8)	21(80.6)	28(77.8)	28(82.4)	16(84.2)	29(76.6)

Legend: CKD*: Kidney Chronic Disease; %: percentage, n: number

DISCUSSION

Limits of the study

The study framework was the hemodialysis unit of the nephrology department of Sylvanus Olympio University Hospital. These results may not concern the country whole population. There may be some bias in the collection of data related to difference in the interpretation of patient responses. In other hand some patients who experience chronic kidney failure syndrome may not be able to reach modern health facilities for differences reasons, knowing that the first contacts are the traditional healers in our context. Those may die during transport. All these constraints can reduce the sample size and underestimate the epidemiological indicators of reporting symptoms. To evaluate the anxiety and depressive disorders, we have chosen the HAD scale. [10] This categorical approach finds its limits in the

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existence of a syndromic comorbidity (anxiety - depression). Despite these limits, the consistence of the results constitutes a reliable and enough baseline data for further large studies on neuropsychiatric morbidity in hemodialysis field. The study outcome evidence based need to be shared with the scientific community.

Epidemiological aspects

The average age of hemodialysis patients was 46.5 years with a greater representation of the 40-59 years age group at 48.35%. These results are similar to 45.49 years old [11] but less than 63.1 years reported in the previous studies. [12] Indeed, higher life expectancy, supported by high accessibility to quality healthcare and better socio-economic conditions in Western countries, may explain this difference. There was male predominance reported by several authors. [13,14] The young age of the study population shows that kidney failure disease affects economically active social layers in Africa and poses a severe public health problem. The average progression of chronic kidney disease (CKD) before dialysis was 39.16 months. It was similar to those reported in African regions. [15,16] This long waiting time before dialysis reflects the delay in the diagnosis, the insufficiency of dialysis stations and medical specialized management team of kidney disease in African environment. The corollary is an end-age renal disease that requires substitute treatment by hemodialysis or renal transplantation. The study recorded a mean hemodialysis lifetime of 3.7 years, similar to 3.86 years observed by some authors, [18] but less than 8 years with a standard deviation of 6.4 years reported in developed countries.[10,17] The high average length of life on dialysis in the French series can be explained by the higher life expectancy in the Western countries, the diagnosis and early initiation of substitution treatment at the expense of social security, and the availability of dialysis centers.

Factors associated with anxiety and depressive disorders

Concerning anxiety, women expressed three times more anxiety than men (RR = 2.6, p = 0.03). A study on anxiety and depression in hemodialysis patients performed in France had revealed the same observation (RR = 2.6), [12] regardless of the tools used. [19,20] In addition, 83.3% of the traders who were four times more likely to develop anxiety disorders (RR = 3.6, p = 0.04) were women. Employment is considered a protective factor while inactivity is a source of social stress. The work would allow the patient to widen the field of relationships, asserting responsibilities, financial independence and controlling emotions. [21,22] The absence of health insurance exposed dialysis patients to three times risk of anxiety (RR = 2.6, p =

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0.04). Social security is an important financial relief in a context of low socio-economic status and should be encouraged in African settings. [23,24]

Regarding depression, the duration of CKD before undergo dialysis has a significant influence on the onset of depression. Indeed, an evolution of chronic renal disease less than 6 months was associated with a threefold increase in the risk of depression (RR = 2.7, p = 0.04). This factor has not been reported in the previous studies. Depression is also linked to social stigma and the high cost of periodic dialysis care in resource-poor settings. [25,26]

CONCLUSION

This work has shown that anxiety and depressive disorders exist in patients with periodic hemodialysis treatment. The most affected subjects were women, traders, patients without social security and those with profound traditional culture system. Depression and anxiety symptoms are due to late diagnosis of renal failure disease, delayed of iterative renal cleansing, high cost of dialysis, and socio-cultural prejudices. Collaboration between practitioners and the introduction of social security system with cultural well understanding are required to improve patient's quality of life.

No registration number and acknowledgement form to declare.

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