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Factors Related to Depression in Patients Undergoing Hemodialysis Due to Renal Failure in Senegal

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Abstract

Depression is often encountered with chronic diseases such as renal failure, for which the prognosis has been improved by hemodialysis. The occurrence of depression with these chronic ailments is related to several factors. The aim of this work was to identify risk factors for depression in a population of patients undergoing hemodialysis due to renal failure. We conducted a cross-sectional descriptive study from 1st January 2012 to 31st May 2014 in the setting of the hemodialysis unit of the Nephrology Department of the Aristide Le Dantec Hospital in Dakar, Senegal. The study population was comprised of chronic hemodialysis patients who had freely and unequivocally provided their informed consent. The self-reporting Beck Depression Inventory (BDI) short-form for depression was used. This short-form version of the BDI was a tool designed to allow the practitioner to perform a rapid assessment of depression. It consisted of 13 items. After administering this assessment, we also collected all the epidemiological and clinical data for this patient population using a pre-established form. Eight-three patients were recruited during the course of the study. These comprised 39 males (47%) and 44 females (53%), i.e. a sex ratio of 0.88. The mean age was 44.73 years, ranging from 18 to 79. The incidence of depression, according to the short-form BDI, for this population was 57.8%. The duration of the dialysis treatment and a diabetic background constituted the principal factors that correlated significantly with depression. Depression correlated neither with age, gender, nor marital status. Professional engagement, level of education, socioeconomic status and prior incidences of depression also did not correlate with the occurrence of depression. In this study, depression affected more than half of the individuals with renal failure. The principal risk factors were the duration of the dialysis treatment and a diabetic background.

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Keywords

Depression, Chronic Renal Failure, Hemodialysis, Risk Factors

1. Introduction

Mood disorders mostly often result from the interaction between several stress factors that stem from chronic ailments. Depression is the most common psychiatric pathology among individuals undergoing hemodialysis for renal failure (Khalil & Frazier, 2010). It can contribute to a poor prognosis by reducing adhesion to the treatment, and by increasing the risk of morbidity and mortality. Hence the relevance of systematic screening for depression among individuals suffers from renal failure, and the importance of adapting their treatment accordingly. Improved prevention of depression may be achieved through identification of the risk factors.

The aim of our work was hence to identify risk factors for depression in a population of individuals undergoing hemodialysis due to renal failure.

2. Patients and Methods

We conducted a cross-sectional descriptive study from 1st January 2012 to 31st May 2014 in the setting of the hemodialysis unit of the Nephrology Department of the Aristide Le Dantec Hospital in Dakar, Senegal.

The study population was comprised of chronic hemodialysis patients who had freely and unequivocally provided their informed consent.

The self-reporting Beck Depression Inventory for assessment of depression was used, which has 13 items in its shortened form. This short-form version is a tool designed to allow the practitioner to perform a rapid assessment of the depression.

After administering this assessment, we also collected all the epidemiological and clinical data for this patient population using a pre-established form.

3. Results

Eight-three patients were recruited during the course of the study. The mean age was 44.73 years, ranging from 18 to 79. There were 39 males (47%) and 44 females (53%), i.e. a sex ratio of 0.88.

The 51 - 70 years age group and the 31 - 50 years group were represented the most, comprising 38.6% and 37.3% of the population study, respectively.

Our patient population contained 26 individuals (i.e. 31.3%) who were actively involved in the work force, while 68.7% were not employed. See **Table 1**.

In our series, 54.2% had a somatic comorbidity. Arterial hypertension (AHT) was the most frequent comorbidity that was encountered (68.8%). Five patients were diabetic, while 9 patients had other somatic comorbidities. The other comorbidities that were encountered were cardiopathy, gastro-duodenal ulcers, hemorrhagic disease, benign prostate hypertrophy, polycystic kidney disease and viral hepatitis.

In our series, 97.4% of the patients did not have a history of prior incidences of depression. We noted prior incidences of depression for two patients, i.e. 2.6% of the cases. Six patients had a family history of depression.

The prior duration of the chronic kidney disease was 4.71 years on average, i.e. 56.62 months, with a maximum of 14 years.

The period during which they had already undergone hemodialysis was 3.86 years on average, ranging from one to fourteen years.

The occurrence of depression according to the short-form BDI was 57.8%. The depression occurred with 48 patients, 23 of whom were male and 25 were female.

For 58.8% of the depressed patients, the depression was found to be minor. Two patients had severe depression, while 18 had average to moderate depression.

Occurrence of Depression According to the Epidemiological and Clinical Variables

Depression was more common with patients in the 18 - 30 years and the 31 - 50 years age groups, accounting

Table 1. Epidemiological and depression data.

		No depression	Depression	Cumulative	
Age group	0 to 30 years	31.6%	68.4%	100%	
	31 to 50 years	32.3%	67.7%	100%	$P = 0.107$
	51 to 70 years	56.3%	43.8%	100%	
	More than 70 years	100.0%	0.00%	100%	
Gender	Male	43.6%	56.4%	100.0%	$P = 0.805$
	Female	40.9%	59.1%	100.0%	
Area of residence	Urban	43.6%	56.4%	100.0%	$P = 0.704$
	Rural	39.3%	60.7%	100.0%	
Marital status	Single	34.8%	65.2%	100.0%	
	Married	44.0%	56.0%	100.0%	$P = 0.742$
	Divorced	40.0%	60.0%	100.0%	
	Widowed	60.0%	40.0%	100.0%	
Level of education	No schooling	32.3%	67.7%	100.0%	
	Primary	37.5%	62.5%	100.0%	$P = 0.192$
	Secondary	46.2%	53.8%	100.0%	
	University	70.0%	30.0%	100.0%	
Employed	Yes	46.2%	53.8%	100.0%	$P = 0.620$
	No	40.4%	59.6%	100.0%	
Socio-economic level	Low	32.3%	67.7%	100.0%	
	Average	45.7%	54.3%	100.0%	$P = 0.222$
	High	66.7%	33.3%	100.0%	

for 68.4% and 67.7% of the patients, respectively. The 51 - 70 years age group suffered less from depression.

Women were depressed in 56.3% of the cases, while for men it occurred in 59% of the cases.

We found that 56.2% of the patients living in urban areas were depressed, while depression among patients in rural areas occurred in 60.7% of the cases.

The occurrence of depression was 65.2% among singles, 56% for married people, 60% for divorcees and 40% for those who were widowed.

Those patients who had a university level of education were less depressed. The incidence was higher for those who lacked formal education (53.8%), among patients who completed primary school (62.5%) and secondary school (53.8%).

For patients not in the work force, we found depression in 59.6% of the cases. Patients who were employed were depressed in 53.8% of the cases.

In terms of socioeconomic status, patients who were considered to be at a lower level were depressed in 67.7% of the cases. The incidence of depression was 54.3% for patients at an average level and 33.3% for those with a high socioeconomic standing.

The two patients who had previously experienced periods of depression did not experience depression in this setting.

The incidence of depression was 59.2% among patients who did not have a prior history of depression.

Sixty-three percent of the patients without associated comorbidities suffered from depression. Patients with hypertension had depression in 51.6% of the cases, while 60% of the diabetic patients had depression.

The duration of the dialysis correlated with the depression ($P = 0.04$).

See **Table 2**.

Table 2. Correlations between clinical data and depression.

Prior individual incidences of depression	Yes	100.0%	0.0%	100%	*P* = 0.094
	No	40.7%	59.3%	100.0%	
Family history of depression	Yes	33.3%	66.7%	100.0%	*P* = 0.649
	No	42.9%	57.1%	100.0%	
Existence of somatic comorbidities	Yes	46.7%	53.3%	100.0%	*P* = 0.367
	No	36.8%	63.2%	100.0%	
Types of comorbidities	Others	44.4%	55.6%	100.0%	
	Diabetes	40.0%	60.0%	100.0%	*P* = 0.810
	AHT	48.4%	51.6%	100.0%	
Duration of the dialysis	From 0 to 5 years	39.4%	60.6%	100%	*P* = 0.04
	More than 5 years	52.9%	47.1%	100%	

4. Discussion

4.1. Epidemiological Aspects

The age of our population ranged from 18 to 78 years. The mean age of 44.73 years in our study is similar to the mean age reported in other studies of individuals suffering from renal failure in Senegal and other parts of Africa (Lengani, Kabore, & Ouedraogo, 1994; Sadiki, 2012).

In our series, renal failure considerably affected young and socioeconomically active people. In developed countries, chronic renal failure patients receiving hemodialysis tend to be considerably older (Judith, 2010; Kutneri, Zhangi et al., 2005).

This difference between African and Western countries may be due to a greater ease of access to medical care and a generally higher standard of living in Western countries (Judith, 2010; Page, 1992), as well as the lower overall life expectancy in our country.

Our series revealed a net predominance of renal failure among females (53%), with a sex ratio of 0.88. A prior study carried out in Dakar by Ouattara in 2008 also reported a predominance among females, with a sex ratio of 0.93 (Ouattara, 2008). In 2004 in Tunisia, Mouhamed, N., obtained results similar to ours, with a sex ratio of 0.97 (Mouhamed, Mouhamed et al., 2008). This predominance among females corresponds with the unfavorable distribution of the etiology for chronic renal failure for women.

We found that 66.3% of the patients resided in urban areas. The localization of hemodialysis centers in urban areas, and rural exodus are among the factors that underlie this disparity.

Fifty-seven patients, i.e. 68.7%, were not employed. Lower workforce participation rates were encountered by Zouari et al. in a Tunisian study, where 83% of the patients were not employed (Zouari, Elleuch et al., 2011). This predominance of patients who are not actively employed may be explained, to a certain extent, by the predominance of females in our study population. Indeed, in our setting, the majority of women were housewives and they were hence not engaged in the work force (Sqalli, Ramouz, Fahi et al., 2005). On the other hand, this could also be due to constraints imposed by the chronic kidney disease and the hemodialysis sessions. Similarly, the 51 - 70 years age group which was the most highly represented in our series (38.6%) corresponds with the retirement age in Senegal.

4.2. Clinical Aspects

In our series, 54.2% had somatic comorbidity. Arterial hypertension (AHT) was the most common comorbidity, at 68.9%.

These results can be explained by the fact that AHT has been identified by hospital studies as being one of the main causes of chronic renal failure in Senegal. This AHT can equally be part of the setting of glomerular diabetic nephropathy (Sakho, 2013).

The duration of the hemodialysis treatment was 46.32 months, on average. Prior studies in Dakar that were performed between 2009 and 2012 found an average duration of 41.3 and 31.37 months, respectively (Beard, 1969; Sadiki, 2012).

The scheduling of the hemodialysis was at least two sessions of 4 hours per week in 97.6% of the cases. Indeed, according to Page, one session every 2 to 3 days that lasts 3 to 5 hours is required (Page, 1992). Stricter adherence to this schedule could readily contribute to an improvement in the quality of life for our patients. This is however not always possible due to the limited scheduling availability in hemodialysis centers, and the still elevated cost of dialysis sessions for patients who seek this treatment at private healthcare centers.

4.3. Incidence of Depression According to the Beck Depression Inventory

In our study, the incidence of depression according to the Beck Depression Inventory was 57.8%. The values, as reported in the literature, tend to varyfrom 20% to 67% (Dogan, Erkoc, Eryonucu, Sayarlioglu, & Agargun, 2005; Watnick, Kirwin, Mahnensmith, & Concato, 2003).

Lower incidences are seen in some studies. Major depression, as diagnosed using the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria, afflicts 15% to 20% of patients according to a recent literature review by Khalil and Frazier (Kimmer & Peterson, 2005). Untas et al. noted that 22.7% of dialysis patients expressed being depressed in a self-assessment questionnaire (Untas, Aguirrezabal et al., 2009).

A Moroccan study showed a higher incidence of depression and anxiety, with this occurring for approximately 2/3 of cases (Sylla, 2001). This variation is deemed to be due to the use of different methodologies (Untas & Chauveau, 2008). Some authors use the DSM-IV diagnostic criteria and only consider major depressions, which are more severe. Others, on the other hand, take all of the displays of depression into account, thus including even the more moderate ones.

Incidence levels reported in the literature are higher when self-assessment tools are used, like the Beck inventory, compared to broader based evaluation means (Anderson, Freedland et al., 2001).

4.4. Factors Relating to Depression

In our study, bivariate analysis allowed for correlations between quantitative variables and the occurrence of depression to be investigated. Depression was not related with age, gender or marital status. Professional engagement, level of education, socioeconomic status, and prior incidences of depression did not correlate with the occurrence of depression (see **Table 2**).

Conversely, depression has been correlated with being female in the literature. This corroborates the notion of a greater susceptibility among women and a lack of professional engagement. Hence, if this lack of engagement is seen as a cause for lower social status, employment would allow a patient to broaden their network of contacts, to assume additional responsibilities and to affirm their independence (Brour, Rabhi, & Boussetta, 1991; Kovess, 1996; Zouari, Elleuch et al., 2011).

Diabetes correlates with the occurrence of depression among hemodialysis patientsalthough diabetes constitutes a risk factor for depression in and of itself, independently of the requirement to undergo hemodialysis. It was significantly linked with depression in our study (Sylla, 2001; Buhl & Hardy, 2007).

Patients who had undergone hemodialysis for less than 5 years exhibited a higher level of depression that those who had undergone dialysis treatment for a longer time. Indeed, patients who had undergone hemodialysis for less than 5 years were depressed in 60.6% of cases, while the incidence of depression was only 41.7% among those who had undergone dialysis for longer than 5 years. The duration of the dialysis treatment hence correlated with depression ($P = 0.04$).

We have not found any reference in the literature correlating depression with the length of the dialysis treatment. The more pronounced incidence of depression among patients who had undergone hemodialysis for less than 5 years could be due to a lack of adaptation to being reliant on hemodialysis, and the lack of understanding by the patient regarding their disease.

5. Conclusion

Depression is a common occurrence among hemodialysis patients at the Nephrology Ward of the Le Dantec University Hospital Center. It mostly regards women, and it is significantly linked with the duration of the reliance on dialysis and a diabetic background.

Treatment for depression would mostly likely contribute to an improvement in the quality of life of chronic renal failure patients.

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