Research Article

Erectile Dysfunction and Diabetes: epidemiological and Clinical Aspects in the Thies Region (Senegal) - 🔓

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Cite this article: Diallo Y, Kouka SC, Jalloh M, Diaw S, N'diaye MD, et al. Erectile Dysfunction and Diabetes: epidemiological and Clinical Aspects in the Thies Region (Senegal). Am J Urol Res. 2019;4(1): 008-0012.

ABSTRACT

Introduction: The objective of this work is to study the epidemiological and clinical aspects of erectile dysfunction in a population of diabetic patients in the Thies region.

Patients and Methods: This is a prospective and descriptive study conducted over a period 1 year from 1st may 2016 to 30th April 2017 involving 305 patients.

Results: Of the total population studied, 184 patients (60.3%) had erectile dysfunction. The mean age of the patients was 61.9 +/- 9.2 years. Type 2 diabetics were the most representative with 92.8% of cases. Retirees were the predominant group in the erectile dysfunction group with 43%. The majority of diabetics were monogamous in the erectile dysfunction group (53.8%). Schooling was found in 63% of men with erectile dysfunction. Erectile dysfunction was severe in 35.9%, moderate in 38.6% and mild in 25.5% of cases. All patients with a duration of diabetes ≥ 20 years experienced severe dysfunction.

Conclusion: Erectile dysfunction is a common pathology in diabetic subjects. Its screening should be systematic in this field and its management must be multidisciplinary including both the diabetologist, the urologist and the cardiologist.

Keywords: Erectile dysfunction; Diabete; Risk factors; Chronic complications

INTRODUCTION

Erectile Dysfunction (ED) is defined as the inability to achieve or maintain an erection sufficient to have satisfactory sexual intercourse [1]. It is constantly increasing during these last decades. It has a particular aspect in the diabetic, because it appears earlier and often more severe compared to the general population. The incidence of ED is higher in the diabetic population [2,3]. Thus, it varies from 11 to 39% in the general population and from 30 to 71% in the diabetic [4]. ED is a source of significant psychological and relational suffering for the diabetic patient. For some authors, it represents a precursory symptom of diabetes [5].

The aim of this work is to study the epidemiological and clinical aspects of ED in diabetic subjects in the Thies region.

PATIENTS AND METHODS

This was a prospective study during period of 1 year from 1st may 2016 to 30th April 2017, which allowed to collect 305 diabetic patients in different hospitals in the region of Thies including Saint Jean de Dieu Hospital and the urology and medicine departments of Mbour hospital.

The inclusion criteria for the study were: male patients, aged 18 to 80 years, known diabetics with erectile dysfunction. The criteria for non-inclusion were non-diabetic patients and those under 18 years of age or over 80 years of age.

The variables studied were: age, occupation, marital status, type of diabetes, diabetic balance, duration of diabetes and associated risk factors and treatment.

The data were collected through a pre-established questionnaire based on the IIEF15 score. It was proposed to patients during consultation after informed consent. In the first approach the participant filled the questionnaire himself if he could read and write. In the second approach, the surveyor filled the questionnaire for the participant.

The data collected were analysed using the statistical software SPSS version 21. Categories variables were presented in frequencies and percentages. The exact Fisher test was used to assess the correlation between two variables and the P-value less than 0.005 was considered statistically significant.

RESULTS

Of the 305 diabetic patients surveyed, 184 patients (60.3%) had ED compared to 121 patients (39.7%) who did not have ED (Figure 1).

The mean age of diabetic patients was 61.9 ± 9.2 years in the ED group and 49.9 ± 13.2 years in the no ED group (Figure 2).

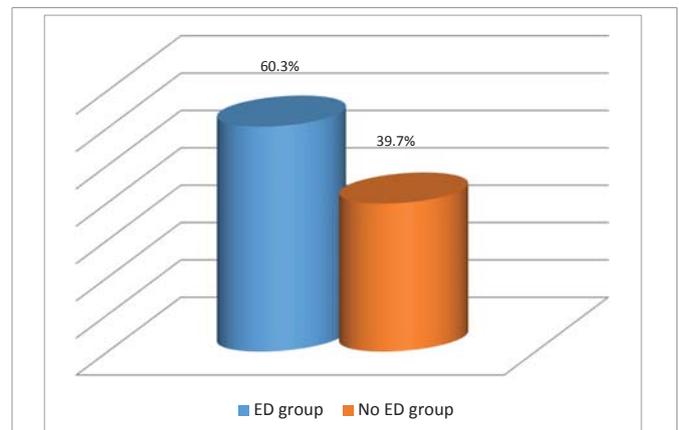Type 2 diabetics were the most representative with 92.8% (Table 1).

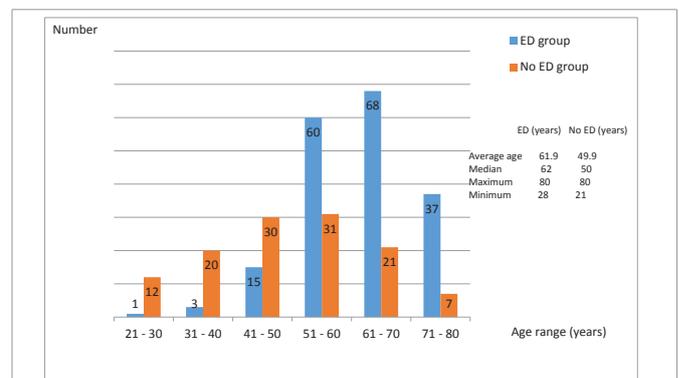**Figure 1:** Distribution of the population into ED group and No ED group.

Figure 2: Distribution of patients by age group.

On the socio-professional level, retirees were the most represented in the ED group with 43%, followed by traders and civil servants with 11.4% and 10.3% respectively.

The majority of diabetics were monogamous in the ED group at 53.8% (Table 2). Sixty-three percent of patients with diabetes and ED were in school.

The mean duration of diabetes progression was 8.4 +/- 6.8 years with extremities of 1 and 40 years for a median of 7 years (Table 3).

Diabetics with poor glycemic control according to the level of HBA1c are the majority with a rate of 63.28% or 193 patients. In addition, diabetics with poor glycemic control were more often found in the ED group than in the ED group with 61.66% and 38.4% respectively (p value < 0.005).

According to the IIEF15 score, ED was severe in 35.9% of patients, moderate in 38.6% and mild in 25.5% (Figure 3).

All patients with a duration of diabetes ≥ 20 years had severe ED. Thus, we obtained 46.9% of severe erectile dysfunction in smokers, 44% in hypertensives, 64.3% in hypertensive diabetics and smokers. Arterial hypertension was found in 122 patients, or 40% of cases. Among hypertensive diabetics, ED was found in 100 patients, a prevalence of 81.97%. In obese patients the rate is close to 66.7% of severe ED (Figure 4).

DISCUSSION

Diabetes is a factor in the occurrence and aggravation of ED. The prevalence of ED in the diabetic subject is variable. It is estimated in the world between 20 and 67.4% of cases [1]. Droupy [5] in France and Siu in Hong Kong [6] found a rate of 68% and 63.6% respectively. Kambou T [7] in Burkina Faso, found a prevalence of 57% of cases.
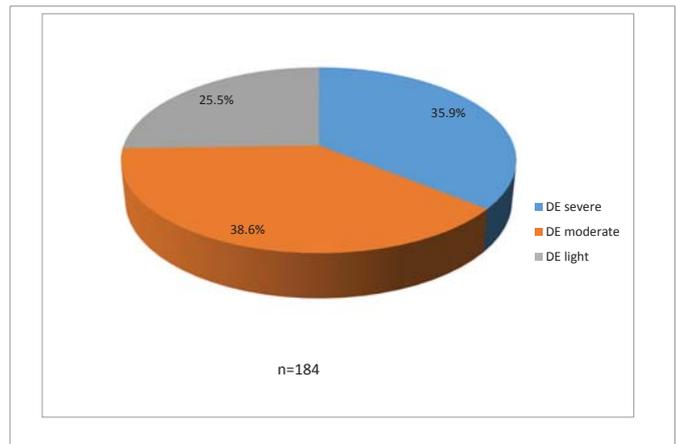

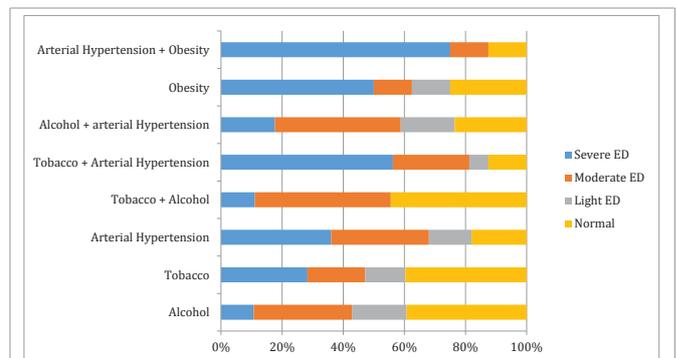**Figure 3:** The different types of ED.

Figure 4: The different types of ED according to the associated risk factors.

These results are consistent with those of our series which shows a rate of 60%. Diabetes causes impaired endothelial cell function by decreasing Nitric Oxide (NO) synthase activity. In addition, it should be noted that the presence of other risk factors including arterial hypertension, tobacco and obesity could further deteriorate erectile function.

The average age of patients varies according to the authors. In our study the average age of diabetic subjects is 61.9 years in the ED group versus 49.9 years in the group non ED. Diallo Y [8], found a mean age of 68 in the ED group versus 65 in the non ED group. This is close to that reported by Tardieu [9], which is 57.5 years, as well as that reported by Ab Rahman [10] in Malaysia and El Achhab [11] in Morocco with 54.7 years and 58.4 years respectively. Years, Age is a determining factor in the appearance of ED. There is a strong correlation between age, duration of diabetes and the severity of ED, indeed, there is a significant increase in the prevalence of ED as a function of age groups in diabetic subjects.

The existence of a link between the level of schooling and the occurrence of ED in diabetics is controversial. Gueye et al. [12] found an enrollment rate of 60.9% while El Achhab Y et al. [11] had a lower enrollment rate of 46.1% of cases. One could suppose that the lack of schooling could explain the lack of information about adherence to the diet, adherence to treatment and the high rate of poorly monitored diabetes, which could explain the early onset or worsening of ED.

There are few studies on the matrimonial regime. The majority of the diabetic subjects of our series, lived in monogamous mode in the

Table 1: Distribution of subjects by type of diabetes.

Type of diabetes	Erectile Dysfunction		Total
	No ED Group	ED Group	
Type 1	18	4	22
Type 2	103	180	283
Total	121	184	305

Table 2: Status by marital status of patients ($p ≤ 0.05$).

Situation matrimoniale	Erectile Dysfunction		Total
Marital status	ED group	No ED group	
Monogamy	99	66	165
Polygamy	79	37	116
Single	3	17	20
Divorced	3	1	4
Total	184	121	305

Table 3: Relationship between ED and diabetes outcome ($p <0.01$).

Duration of Diabetes	Erectile Dysfunction		Total
	ED group	No ED group	
< 5 Years	57	89	146
05-Sep	54	21	75
Oct-14	34	10	44
15-19	20	1	21
≥ 20 Years	19	0	19

group DE as in the group of no DE with 53.8% and 54.5% respectively, which goes in the direction of the results of Gueye S et al. [12] with 47.3% monogamous diabetics. This notion of predominance is relative, in relation to a selection bias. It is difficult for us to establish a direct link between the matrimonial regime and the occurrence of ED.

Costa et al. [13] found 5.6% of type 1 diabetic patients versus 94.4% of type 2 diabetics. In our study, type 2 diabetes was 92.8% of cases compared to 7.2% of type 2 diabetes. In Senegal, Gueye S et al. [12] found type 2 diabetes mellitus in 90.8% compared to 9.2% of type 1 diabetic patients. The long history of diabetes with age and diabetes-related vasculonervous disorders explains the risk of developing diabetes. The several studies have established a clear relationship between erectile dysfunction and age. Indeed, El Achhab et al. [11] found in their study a progressive increase in the rate of erectile dysfunction with age in diabetics by 60% among people aged 40 to 49 years up to 94.95% among people aged 60 and more.

In addition, a US study showed a 5 to 15% increase in the prevalence between 40 and 70 years in a diabetic population, an increase in the incidence of erectile dysfunction from 12 per 1000 men aged 40 and 49 at 29 per 1000 aged 50 to 59 and 46 per 1000 aged 60 to 69 [14].

Occupational status influences the occurrence of ED in diabetics. Diallo [8] found in his study a predominance of retirees about 62%. In our study, ED was found in retired diabetic subjects at a rate of 43%. The prevalence of ED among retirees could be explained by the advanced age associated with ED, especially since in our series retirees are the most represented.

According to the IIEF 15 score, ED was severe in 35.9%, moderate in 38.6% and mild in 25.5% in our study. Droupy [3] found 30% severe ED, 20.8% moderate ED and 17.1% mild ED for an overall incidence of ED of 67.9%. These results are similar to those found in our study. Thus, the association diabetes and ED is deleterious and aggravates the evolution of this sexual disorder which is often of organic type.

In our study, diabetics with poor glycemic control according to the HBA1c level are the most representative, ie 63.28%. In addition, DE was found more often in subjects with poor glycemic control (61.66%). In his study, Gueye [12] found 61.4% of balanced diabetics. Palmer [15], has highlighted the role of the balance of diabetes and body mass in the occurrence of ED.

Erectile dysfunction in diabetics has a multifactorial origin: endothelial dysfunction, neuropathy, Lapeyronie's disease but also the importance of the psychological impact of a chronic disease [15-17]. In our series, we have seen a gradual increase in the prevalence of ED according to the duration of diabetes progression. Thus, the rate of ED has increased from 39% in diabetics whose duration of diabetes is less than 5 years to 100% in diabetics with an evolution of more than 20 years. A significant relationship was found between ED and seniority diabetes ($p = 0.0001$). This trend is also found in the United States and Turkey [18,19].

The prevalence of ED is increased in smoking, hypertensive and even chronic renal failure patients [16,20].

Several authors, like Martin et al. [21] have found as predictive factors of ED, diabetes, depression, disorders of the lower urinary tract.

In our study, 53 of the 305 patients with diabetes were smokers or 17.38%. Of these, 31 had ED (58.5%). Numerous studies have shown a significant association between smoking and ED in diabetics [22-24]. In our study, 59.4% of people with diabetes who had erectile dysfunction took more than 20 packets a year. Thus, a significant relationship was found between the duration of tobacco intoxication and the occurrence of dysfunction. Diao [25] reported that the rate of ED would increase with the duration of tobacco intoxication.

Chronic alcoholism causes peripheral neuropathies with erectile dysfunction [26]. Erectile dysfunction is found in 17 of our diabetic and alcoholic patients with a prevalence of 5.5%. Gueye [12] found 6.3% of alcoholic and diabetic patients with ED.

Arterial hypertension was found in 122 patients, or 40% of cases. Among hypertensive diabetics, ED was found in 100 patients, a prevalence of 81.97%. This rate is consistent with that found in Ivory Cost by N'goran with a rate of 80.5% [27,28]. It should be noted that antihypertensive therapy (thiazide diuretics, beta-blockers) in some patients is also a factor that promotes ED.

The duration of ED is variable in diabetics. In our study, the mean duration of ED progression was 2.46 +/- 1.5 years. This average duration of ED is comparable to that found by N'goran who found an average duration of 3 years with extremes ranging from 1 to 6 years [25]. In addition, severe ED is more common in diabetic subjects when combined with hypertension and obesity (85.7%) followed by smoking and arterial hypertension (64.9%). Therefore, the combination of comorbidities is an aggravating factor of ED.

CONCLUSION

Erectile dysfunction and diabetes are becoming more and more common. ED is considered a sentinel symptom of the evolution of diabetes. A discovery of the ED must systematically encourage an evaluation of the field including the search for diabetes and other risk factors. In this context, the proper management of erectile dysfunction must always take into account the diabetic field and thus significantly improves the quality of life of these patients. A multidisciplinary collaboration including the diabetologist, the urologist must be established since the beginning of the affection.

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