

## ORIGINAL PAPER

# Risk Factors for Erectile Dysfunction in Patients with Newly Diagnosed Diabetes Mellitus

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**Goal:** To evaluate risk factors of erectile dysfunction (ED) and find out incidence in patients with newly diagnosed diabetes mellitus.

**Material and methods:** All patients from Centre for Diabetes with newly diagnosed diabetes mellitus type 2 are involved in study. We have done interview using questionnaire—International Index of Erectile Function (IIEF)-5. Result of IIEF-5 less than 21 was used as bottom line for identification of patients with ED. **Results:** newly diagnosed diabetes mellitus type 2 was a case in 243 patients from which 37% of them had ED. Comparing potent man with those with ED there are statistically significant difference according to smoking, duration of smoking, hypertension, body mass index and serum level of glycozated hemoglobin HbA1c. Using multivariate logistic regression model, age was identified as the most significant risk factor.

**Conclusion:** Patients with newly diagnosed diabetes mellitus have high prevalence of ED which can be related with other risk factors such as age of diabetes onset, hypertension, smoking and body mass index. **Key words:** erectile dysfunction, risk factors, diabetes mellitus

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## 1. INTRODUCTION

Type 2 diabetes mellitus (DM) is a common, serious disease that leads to the risk of cardiovascular mortality, which is 2 to 4 times more common in this group than in patients without DM. This increased risk is already present in newly diagnosed patients, and this is one of the reasons why screening for type 2 DM is recommended. The risk is higher because patients with type 2 diabetes have asymptomatic phase between the beginning of diabetic hyperglycemia and clinical diagnosis made at the end. This stage lasts at least 4-7 years (1,2,3).

This untreated hyperglycemia may explain the relatively high prevalence of microvascular complications (up

to 48%) and macrovascular complications (40%) in patients with newly diagnosed DM (1).

One of the most common complications of diabetes mellitus type 2 is the erectile dysfunction (ED). Under these conditions, ED is associated with reduced quality of life and occurs at an earlier age than in the general population. It appears frequently in terms of clinical disease and represents a problem.

Several studies have researched the prevalence and predictors of ED in patients with type 2 DM but no studies in newly diagnosed cases of DM. Early diagnosis and treatment of ED in these men can prevent or delay progression,

and can improve quality of life of these people. The aim of this study was to determine the prevalence and assess the risk factors for ED in patients with newly diagnosed type 2 DM (2,3).

## 2. MATERIAL AND METHODS

During the period from January 2007 until June 2010 conducted is an open prospective study that included patients with newly diagnosed DM from the time of conducting interviews. In this way, 243 patients with type 2 DM, aged 24-65 years, were included in the study. In accordance with WHO recommendations, type 2 DM was diagnosed when the following conditions are met: the patient who have symptoms of hyperglycemia, measured fasting capillary blood glucose  $>6.1$  mmol/L or fasting plasma glucose level  $\geq 7.0$  mmol/L on two occasions, for patients with symptoms of hyperglycemia, a blood glucose measured in full capillary blood  $\geq 6.1$  mmol/L or plasma glucose  $\geq 7.0$  mmol/L.

All patients were examined by an experienced diabetologist with an interview about their sexual life. During the interview, the doctor explained the meaning of the ED before asking questions about the occurrence of ED during last 12 months. An abbreviated version of the International Index of Erectile Function (IIEF) -5 was applied in all patients. Patients with score 5-25 were considered to have ED. Risk factors such as age, education, smoking, was tested by direct questions. Body mass index

(BMI) is based on the weight during three months from setting diagnosis. Blood pressure was calculated as the mean of two measurements in the sitting position after 5 min of rest.

The patient was considered to be hypertensive if diastolic pressure was  $\geq 90$  mmHg, systolic blood pressure  $\geq 140$  mmHg, and/or taking antihypertensive drugs.

Hypercholesterolemia was defined as serum cholesterol  $\geq 6.2$  mmol/L, while the marginal hypercholesterolemia defined as a level between 5.2-6.2 mmol/L. Statistical analysis starts with descriptive methods and continues to test links between ED and potential risk factors. Multivariate logistic regression allows the identification of independent predictors that were significantly associated with ED, where  $p < 0.05$  considered to indicate a significant statistical significance.

### 3. RESULTS

Table 1 shows the clinical characteristics of patients with newly diagnosed diabetes mellitus type 2, which included 243 patients with newly diagnosed DM, with the average age of  $42.9 \pm 1.7$  years. In the sample there was 15.5% smokers and 8.8% had hypertension. The prevalence of ED in patients with newly diagnosed type 2 diabetes mellitus is 37%. Comparing with potent patients, patients with ED have significant differences in serum levels of HbA1c, smoking habits, duration of smoking, BMI and hypertension. When multivariate logistic models are used to identify independent predictors of ED, the four main risk factors were significantly and independently associated with ED, most notably the age.

Comparison with patients  $< 40$  years, patients aged 40-50 years have almost five times greater risk of ED, while patients  $> 50$  are at nine times greater risk. Smoking, hypertension and BMI were independently associated with ED. Smokers have almost three times greater chance of ED than nonsmokers. And people with hypertension had double the risk of ED. Weight and obesity produce higher risk for ED, five times and twice, approximately, than in people with normal BMI.

	Total number of diabetic patients (n = 243)	
	With ED No. (%) 89 (37)	Without ED No. (%) 154 (63)
Age	48.841.8	3741.6
Age groups		
<40	38(16)	142(58.6)
40-50	112(46)	68(28.0)
>50	93(38)	33(13.4)
Tobacco smoking		
Non smoker	117(48)	70(29)
Ex-smoker	12(5)	6(2.5)
Smoker	28(11.5)	10(4)
Smoking index		
<100	12(5)	6(2.4)
100-200	9 (3.7)	5(2)
>200	3(1.2)	3(1.2)
Obesity		
BMI < 30	45(18.5)	58(23.8)
BMI > 30	10(4)	5(2)
Dyslipidemia		
Without dyslipidemia	22(9)	78(32)
Dyslipidemia	12(5)	6(2.5)
Triglycerides	6(2.4)	4(1.6)
Cholesterol	6(2.4)	6(2.4)
LDL	7(2.8)	4(1.6)
HDL	9(3.7)	3(1.2)
HbA1c, Mean value	6.93	6.44
Hypertension		
Without hypertension	58(23.8)	40(16.4)
Hypertension	12(5)	8(3.3)
Coronary disease		
Without coronary disease	59(24.2)	49(20.1)
Chronic coronary disease	5(2)	4(1.6)

TABLE 1. Clinical features of patients with newly diagnosed diabetes mellitus type 2

### 4. DISCUSSION

In this study the prevalence of ED was 37% and increases with age. The main determinants of risk were age, hypertension, smoking and BMI. Many studies have shown that the prevalence of ED in diabetic patients is 20-75%. These studies were conducted during different periods, in different conditions and in different age groups and are not comparable with this study. Many of these studies showed significant positive correlation with duration of diabetes prevalence. It is not surprising that the prevalence of ED in men with diabetes is larger than in newly diagnosed cases (4,5,6,7).

Influence of age on the ED prevalence is well established in healthy and in people with known DM. Older age was significantly associated with higher prevalence of ED, as evidenced by Table 1. By comparing similar age groups the prevalence in this study, as expected, is

lower. As DM lasts longer, the chance for ED increases, supporting the etiologic significance of DM in the development of ED (3,8).

The link between smoking and ED may be due to the association of smoking with atherosclerosis, which itself can be the cause of ED in diabetic patients. In this study, there is a greater risk of ED among smokers, among those who smoke, and the index of smoking was significantly higher in patients with ED (Table 1).

According to age, hypertension and BMI, smokers have three times larger risk of ED (9-12). It has been shown that smoking increases the risk for ED even in nondiabetics. Medical conditions such as hypertension, depression, heart disease, pelvic trauma and surgery may be associated with increased risk for ED. In connection with hypertension ED is complex and may involve direct effect of high blood pressure and effects of anti-

hypertensive drugs on microcirculation (13-16). In this study, according to age, BMI and smoking, people with hypertension had two times more often ED than those who had normal blood pressure. Elevated HbA1c decreased activity of nitrous oxide and reduced endothelium dependent relaxation factor associated with increased risk for ED (9,17).

Several authors have examined the positive correlation of poor glycemic control and the 5 year incidence of ED in diabetic patients. This finding supports the present results where, comparing with patients with HbA1c levels <8%, patients with HbA1 level >8.1%, which almost three times more often have ED. This study shows significant associations between ED and BMI. Despite adjustments to other significant factors, which suggesting that BMI is an independent factor associated with ED. Also, there is a significant linear trend that allows the statement that the proportion of patients with ED increases with BMI (10,13,15).

## 5. CONCLUSION

Patients with newly diagnosed type 2 diabetes mellitus have a high prevalence of ED occurrence with the other risk factors, including age, hypertension, smoking and BMI.

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Život treba zdravlje

**ČUVAJTE VAŠE SRCE I KRVNE SUDOVE**

✓ PRESTANAK PUŠENJA ✓ ZDRAVA ISHRANA

Održavajte vaš **ukupni holesterol** ispod **5 mmol/l**,  
**LDL holesterol** ispod **3 mmol/l** i **trigliceride** ispod **1,9 mmol/l\***

(\* PREMA NOVIM PREPORUKAMA EVROPSKOG UDRUŽENJA KARDIOLOGA)

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