

Research article

# Erectile Dysfunction among Diabetic Patients Registered in Al-Iskan Primary Health Care, Makkah, 2011

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## ABSTRACT

**Background:** ED can poorly affect the patient quality of life in many aspects. It is estimated that about 86.1% of Saudi diabetic patients have variable degree of erectile dysfunction. Patients usually distressed by this problem but don't discuss this issue with their doctors and want them to initiate this discussion.

**Objectives:** To determine the prevalence of erectile dysfunction in the diabetic patients and their associated factors as well as the percentage of diabetic patients, who tell their primary care doctors about erectile dysfunction in Al-Iskan region, Makkah, Saudi Arabia.

**Subjects and Methods:** A cross-sectional community based study design was done included a simple random sample (computer based) of adult diabetic, males, married who are registered in the PHC of Al-Iskan region, Makkah Al-mukarramah. Six-items of erectile function (1,2,3,4,5,15) from validated Arabic version of International Index of Erectile Function self-administered questionnaire (IIEF) was used for data collection. The ED was categorized into four groups; mild (22-25/30), mild –to-moderate (17– 21/30 ), moderate (11– 16/30) , severe (1-10/30). Patient's age, DM duration, hypertension, retinopathy, nephropathy and history of coronary artery diseases were independently associated with ED among diabetic patients.

**Results:** The study included 181 diabetic male patients. Their age ranged between 22 and 70 with a mean of  $49.3 \pm 10.8$  years. the overall prevalence of ED was 63.5%. Among the 115 patients with ED, it was defined as mild in 18 (9.9%), moderate in 54 (29.8%) and severe 43 (23.8%) patients. Only 66 patients (36.5%) have no erectile function. Almost one third of patients with ED (34.8%) informed their physicians about their problem.

**Conclusions:** the prevalence of ED among Saudi diabetic men is high. It increases with age and duration of diabetes. Other independent risk factors include: hypertension, CAD, retinopathy and nephropathy. Almost one-third of diabetic patients with ED, inform their physicians. Only a small percentage of patients receive treatment for their ED.

**Keywords:** diabetes mellitus; erectile dysfunction; International Index of Erectile Function; Saudi Arabia

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## INTRODUCTION

Diabetes is a chronic multisystemic disease with high prevalence in Saudi Arabia, it is estimated to be 23.7% and it still raising<sup>1</sup>. The primary care doctors tend to regularly check for diabetes control, screen for associated comorbidity and complications. One of the common complication of DM which is neglected and not inquired about is the ERECTILE DYSFUNCTION<sup>2</sup>. Erectile Dysfunction (ED) is the persistent inability to achieve and/or maintain erection of sufficient rigidity to have satisfying sexual activity<sup>3</sup>. ED is primarily a vascular phenomenon, triggered by neurologic control and facilitated by appropriate hormonal and psychological component<sup>4</sup>. DM can interrupt all these mechanisms as diabetics are prone to microangiopathic complications, neuropathy, hypogonadotropic hypogonadism<sup>5</sup> and depression which explain why ED is a common complication of DM. ED can poorly affect the patient quality of life in many aspects<sup>6</sup>. It is estimated that about 86.1% of diabetic patients have variable degree of erectile dysfunction according to the study done in Al-noor hospital, Makkah, Saudi Arabia in 2003<sup>7</sup>. Patients usually distressed by this problem but don't discuss this issue with their doctors and want them to initiate this discussion<sup>8</sup>. Unfortunately only small percentage of doctors ask about ED during their practice<sup>9</sup>. The primary care doctors follow many diabetic patients in regular and short interval compared to diabetic clinic in hospitals which give the primary care doctor the priority and responsibility to discuss ED in a proper way with their patients. Despite the limitation of diagnostic and therapeutic facilities, the primary care doctors can achieve a great job in the management of ED in diabetics. Detailed history and full physical exam can give a clue for the diagnosis and further management. Good control of the DM, hypertension, hyperlipidemia and smoking can prevent or halt the progression of ED<sup>10,11</sup>. Diagnosis and management of depression and anxiety in diabetics, which is considered an important factor in ED DM, can be done in primary care<sup>11</sup>.

Increase in physical activity can decrease the the risk of ED which should be emphasized by primary care doctor<sup>12</sup>. ED can give an important information such as a silent and masked cardiovascular disease and also can predict future risk<sup>13</sup>. The presence of ED is considered an indication to check for diabetic complication caused by microangiopathy in target organs such as retinopathy<sup>14</sup>. ED can be the presenting symptom of DM<sup>15</sup>. A patient who present with ED is two times or more likely to have DM than a patient with no ED<sup>16</sup>. Sildenafil therapy significantly enhanced erectile function and was well tolerated by men with DM and ED<sup>17</sup>.

This study aimed to determine the prevalence and associated factors of erectile dysfunction in diabetic patients in Al-Iskan region, Makkah in 2011.

## PATIENTS AND METHODS

It is a cross sectional community based study included a representative sample of adult diabetic, males, married patients who are registered in the PHC of Al-Iskan region, Makkah Al-mukarramah. Makkah Al-mukarramah is the holy city of whole Muslims. It is located in the western region of KSA. In Makkah city, there is Al-Esken region in western sector of Makkah city and it contains 1466 villa.

The total number of diabetic patients registered in Al-Iskan PHC = 356 patients. The sample size was calculated by using the sample size calculator at [www.raosoft.com](http://www.raosoft.com). The margin of error = 5%, the confidence level = 90% and the sample size calculated = 150 (Expected frequency 61%, worst acceptable 66%). Simple random technique (computer based) selecting the diabetic patients from the list in Al-Iskan PHC.

The 6-items of erectile function (1,2,3,4,5,15) from Arabic version of International Index of Erectile Function self-administered questionnaire (IIEF)<sup>22</sup> was utilized for data collection. The Arabic validated version of IIEF has been used in many studies.<sup>23</sup> The ED was categorized into four groups; mild ( 22-25/30 ), mild –to-moderate ( 17– 21/30 ), moderate ( 11– 16/30 ), severe ( 1-10/30 ). A necessary modification was made to meet the objectives. The self-administered questionnaire consisted of 4 parts: demographic Data which include (age, level of education and the income ), the history of diabetes with associated complication or other chronic illness, the IIEF-6 Questionnaire to assess the degree of the erectile dysfunction and exploring the behavior and idea of the patients toward their primary care physicians.

During the first 2 weeks of June. 2011 the selected patients were contacted by phone. The patient himself was informed about the study and asked if he was willing to participate. Responed patients were contacted at home and given a self-administered questionnaire in an envelope. The filled questionnaires were collected at the same day or next day from the patients` homes, according to their wishes.

The researcher tested the reliability by retesting 10% of the participants to compare the answers. A coefficient of correlation of 93% has been obtained.

## DATA ANALYSIS

Statistical Package for Social Sciences (SPSS) software version 18.0 was used for data entry and analysis. Descriptive statistics (e.g. number, percentage) and analytic statistics using Chi Square tests ( $\chi^2$ ) to test for the association and/or the difference between two categorical variables were applied. P-value equal or less than 0.05 was considered statistically significant.

Erectile dysfunction, based on Arabic version<sup>23</sup> of International Index of Erectile Function self-administered questionnaire (IIEF) was treated as dependent variable in multivariate logistic regression analysis. Patient`s age, smoking history, duration of DM, DM treatment method, hypertension, coronary artery diseases, retinopathy and nephropathy, were treated as independent categorical variables. Multiple associations were evaluated in multiple logistic regression model based on the backward stepwise selection, where significant variables from the univariate analysis were included. This procedure allowed the estimation of the strength of the association between each independent variable while taking into account the potential confounding effects of the other independent variables. The covariates were removed from the model if the likelihood ratio statistic based on the maximum likelihood estimates had a probability of  $> 0.10$ . Each category of the predictor variables was contrasted with the initial category (reference category). The adjusted measure of association between risk factors and depression was expressed as the odds ratio (OR) with 95% Confidence Interval (95% CI). Adjusted or crude ORs with 95% CI that did not include 1.0 were considered significant.

Permission from Joint Program of Family and Community Medicine in Makkah was obtained. All patients were informed about the study and they asked if they want to participate and their wishes were respected. Confidentiality of information was assured. The researcher afforded management to those who are affected.

## RESULTS

The current study included 181 diabetic male patients. Their age ranged between 22 and 70 with a mean of 49.3 and standard deviation of 10.8 years.

Figure 1 demonstrates that the overall prevalence of ED was 63.5%. Among the 115 patients with ED, it was defined as mild in 18 (9.9%), moderate in 54 (29.8%) and severe 43 (23.8%) patients. Only 66 patients (36.5%) have no erectile function.

### **Factors associated with erectile dysfunction.**

#### **-Socio-demographic characteristics Table 1**

##### **- Patient`s age:**

The prevalence of ED increased with age with. All patients aged >60 years have ED compared to 27.0% of those aged ≤40 years. The prevalence of severe ED ranged from 56.0% in patients aged >60 years, down to 5.4% in patients aged ≤40 years. These differences were statistically significant ( $P < 0.001$ ).

##### **- Patient`s education:**

The prevalence of ED did not significantly associated with patient`s education. Approximately two thirds of patients with at least secondary level of education have ED (69.6%) compared to 82.8% of those with postgraduate level of education. The prevalence of severe ED ranged from 19.3% in patients with university education up to 31.0% in patients with postgraduate level of education. However, these differences were not statistically significant ( $P = 0.075$ ).

##### **- Patient`s income:**

The prevalence of ED did not significantly associated with patient`s income. Approximately two thirds of patients with income <7000 SR/month have ED (67.4%) compared to 64.2% of those with income >15000 SR/month. The prevalence of severe ED ranged from 20.7% in patients with income of 7000-15000 SR/month up to 28.3% in patients with income >15000 SR/month. These differences were not statistically significant ( $P = 0.930$ ).

##### **-Smoking history**

Table (2) shows that the prevalence of ED was higher among ex-smokers and smokers than non-smokers. All ex-smokers for less than five years and 64.8% of current smokers have ED compared to 44.9% of non-smokers. The prevalence of severe ED was 10.3% among non-smokers compared to 29.6% and 51.4% among current smokers and ex-smokers for more than five years, respectively. These differences were statistically significant ( $P < 0.001$ ).

#### **-Medical history: Table 3**

##### **- Duration of diabetes mellitus:**

The prevalence of ED also increased with the duration of DM, ranging from 5.4% for DM lasting ≤ 5 years to 100.0% for DM of >15 years (Table 6). Patients with ED had a longer duration of DM than those without ( $P < 0.001$ ). In addition, severity of ED increased with the duration of DM ( $P < 0.001$ ). The percentage of patients with severe ED increased from 0.0% among those who had DM for ≤5 years to 56.5% among patients who had DM for >15 years; the proportion with mild ED decreased from 2.7% among those who had DM for ≤5 years to 0.0% among those who had DM for >15 years.

##### **- Diabetes treatment method:**

The prevalence of ED was associated with treatment method (Table 7), being 71.4%, 52.0%, 91.7%, 48.3 and 100% in treatment with oral agents alone, diet and/or insulin, oral agents plus insulin, oral agents plus diet and oral agents plus diet plus insulin respectively ( $P < 0.001$ ).

### **- Hypertension:**

In patients with hypertension (ED prevalence 90.9%) ED was reported more frequently than in those without hypertension (ED prevalence 51.6%) ( $P < 0.001$ ). A significant association was found between the severity of ED and history of hypertension among diabetic patients ( $P < 0.001$ ).

### **- Dyslipidemia:**

In patients with dyslipidemia (ED prevalence 82.1%) ED was reported more frequently than in those without dyslipidemia (ED prevalence 33.3%) ( $P < 0.001$ ). A significant association was found between the severity of ED and history of dyslipidemia among diabetic patients ( $P < 0.001$ ).

### **- Coronary artery disease:**

In patients with coronary artery disease (ED prevalence 100%) ED was reported more frequently than in those without coronary artery diseases (ED prevalence 59%) ( $P < 0.001$ ). A significant association was found between the severity of ED and history of coronary artery diseases among diabetic patients ( $P < 0.001$ ).

### **- Retinopathy:**

In patients with retinopathy (ED prevalence 100%) ED was reported more frequently than in those without retinopathy (ED prevalence 47.2%) ( $P < 0.001$ ). A significant association was found between the severity of ED and history of retinopathy among diabetic patients ( $P < 0.001$ ).

### **- Nephropathy:**

In patients with nephropathy (ED prevalence 89.6%) ED was reported more frequently than in those without nephropathy (ED prevalence 54.1%) ( $P < 0.001$ ). A significant association was found between the severity of ED and history of coronary artery diseases among diabetic patients ( $P < 0.001$ ).

### **- Psychiatric therapy:**

No significant association was found between the prevalence and severity of ED, from one side, and history of psychiatric therapy, from the other side, among diabetic patients ( $P = 0.071$ ).

### **Multivariate logistic regression analysis of risk factors for depression:**

In the multivariate analysis, Patients aged between 51 and 60 years and those aged over 60 years  $>60$  had almost three-folded risk and eight-folded risk respectively to develop ED as opposed to those aged at least four years (adjusted OR= 3.4, 95%CI= 1.73-6.81). The risk of ED increased with increasing the duration of DM. DM duration between 6 and 10 years, between 11 and 15 years and over 15 years were associated with twice-folded, four-folded and 8-folded higher risk, respectively to develop ED as compared to those of less than five years duration (adjusted OR= 2.1, 95%CI= 1.22-8.02, adjusted OR=4.3, 95%CI= 1.91-21.22 and adjusted OR=7.6, 95%CI=4.21-62.02 respectively). Patients presented with hypertension had higher risk to have ED than those presented without hypertension (adjusted OR= 1.6, 95%CI= 1.11-9.02). Patients who have coronary artery diseases were at almost double-folded risk of having ED as compared to those without coronary artery disease (adjusted OR= 1.9, 95% CI= 1.21-11.05). Patients with retinopathy or nephropathy were at three-folded risk of having ED ((adjusted OR= 3.1, 95% CI= 1.96-9.41 and OR=2.9, 95%CI=1.43-11.63, respectively). However, smoking history, DM treatment method and dyslipidemia were removed from the final logistic regression model. (Table 4)

### **Attitude of diabetic patients towards their physicians**

Almost one third of patients with ED (34.8%) informed their physicians about their problem. Those who did not inform their physicians about ED (n=75) claimed that the reason for that the center and/or the physician not specialized (53.3%), physicians not asking them about this problem (13.3%), it is shameful (13.3%), it is a private issue (10.7%) and it is not an important issue (9.3%). Figure (2)

Approximately one-quarter of diabetic patients with ED claimed that they took treatment for that problem (27%). Figure 3 displays that among those who had ED treatment (n=31), 13 (41.9%) claimed that they were treated with natural food (honey and dates), 7 (22.7%) were treated with drugs (cialis and viagra). The remaining patients were treated with either heral therapy or energetics.

## **DISCUSSION**

The current study aimed at exploring the prevalence of erectile dysfunction (ED) among diabetic men and its associated risk factors.

### **Prevalence:**

A wide range of prevalence rates of ED among diabetic men has been reported in various studies. The prevalence rate of 63.5% found in this study is consistent with the reported prevalence rates of 61-67% in some of the studies conducted in Western<sup>8, 24-26</sup> and Arab countries.<sup>7, 19</sup> However, it is higher than the rate reported by previous studies.<sup>20, 27-29</sup> The differences in the prevalence rates can be explained by differences in the populations studied, the methods used and the research instruments.<sup>30</sup> Additionally, the introduction of effective oral treatment has increased the awareness toward ED, which might explain the higher rates reported in the recent studies as compared with other studies.<sup>31</sup>

Collecting data by self-administered questionnaires can lead to different results.<sup>32</sup> Underreporting and a lower response rate are expected if a self-administered questionnaire is used, especially when dealing with a sensitive issue such as ED. Furthermore, in the Arabic culture, erection is associated with the concept of manhood, therefore, some patients with ED denied the disease.

### **Associated factors:**

The prevalence and severity of ED increase significantly and progressively with age, as reflected by the higher prevalence of overall ED and severe ED as age advances. This association between age and ED confirms what has been shown in other studies.<sup>19,20,24,33</sup> However, ED should not be considered as an inevitable outcome of older age. Among our patients, 23% in the age groups 51-60 years had no ED. The score of ED domain was <10 in 9.9% of our patients; however, the low score is not always indicative of severe ED. It may result from the lack of interest in sex or having no opportunity for sexual activity rather than ED per se.<sup>34</sup>

In agreement with other studies,<sup>13,20,25,26</sup> the duration of DM was an independent risk factor for ED. Contrary to that, a Jordian study concluded that duration of diabetes was not a risk factor for ED.<sup>19</sup>

In this study. This might reflect a strong association between duration and other independent risk factors of ED, particularly age, which resulted in excluding it from the multivariate logistic model. The effect of duration of DM on ED was not evident in another study either.<sup>27</sup> Diabetes is a chronic metabolic disorder with many complications and associated factors that will predispose to erectile problems including psychological stresses of living with diabetes; penile disorders, namely Balanitis, phimosis, Peyronies disease, etc.; premature aging (degeneration) of the corpora cavernosal and other penile tissues.; metabolic abnormalities: hyperglycemia, excessive protein glycosylation; sensory and autonomic neuropathy; microvascular disease; macrovascular disease; hypertension and antihypertensive drugs. This association is likely to intensify as lower targets for blood pressure control and more intensive drug regimes are used, and other associated endocrine disorders. These factors improved with age and duration of diabetes.<sup>35</sup> The association between smoking and ED is another controversial issue. Whereas many epidemiological and experimental studies have shown a significant association,<sup>31</sup> this was not evident in other



studies.<sup>36,37</sup> In diabetic patients, similar discrepancies regarding the association between smoking and ED exist in the literature, a number of studies did not confirm this association.<sup>19,26,38,39</sup> In this study, current smoking was not associated with a higher prevalence of ED. However, ex-smokers were observed to have a significantly higher prevalence of ED compared with nonsmokers in the univariate analysis, but the difference disappeared after controlling for age or CAD in the logistic regression analysis. Apparently, many ex-smokers quit smoking after they had suffered from its morbid sequel.

This study clearly shows the association between diabetic complications (retinopathy, nephropathy and coronary artery diseases), and the prevalence and severity of ED, which has been shown in other studies,<sup>28,29,38</sup> but was not evident in other studies.<sup>8,25,26,37</sup> This finding reflects the bad effect of poor glycaemic control.

### **Attitude towards therapy:**

In the current study, only 7 patients with ED, representing 6.1%, reported using oral therapy for ED. The percentage of patients seeking or receiving treatment is generally lower.<sup>31,32,40,41</sup> This could reflect reluctance on the part of the patient or failure of the doctor to raise the issue. Many patients believe ED would not be recognized as a medical problem.<sup>42</sup> In addition, the fear from possible side effects appear to be the reasons in some of our patients. Nicolosi et al<sup>40</sup> studied treatment-seeking behavior of patients with ED in 4 countries. Overall, only 5% of the patients with ED had been previously treated. A great variability among the patients of the 4 countries was noted (0% in Japan compared with 19% in Brazil). The effect of local culture on treatment seeking behavior has been suggested.<sup>40</sup> A recent large national survey in Australia reported the presence of this gap between the prevalence of ED, and the proportion of men who had actively sought treatment. It showed that the willingness to ask for treatment was significantly related to the ethnic origin.<sup>43</sup> Barriers to discussing sexual dysfunction exist among different cultures though to a variable extent.<sup>40,44</sup> Generally, patients would welcome discussing the problem, but they prefer that their doctors initiate the discussion.<sup>8</sup> However, the proportion of doctors who ask their diabetic patients regarding their sexual problems is low; the vast majority never or occasionally do so.<sup>41</sup>

In our culture, discussing sexual problems may be viewed as an embarrassing discussion for the doctor or his patient but, not by the majority when carried out properly. It is the responsibility of the doctor, as a health care provider, to ensure that his diabetic patient has the chance to address this problem and receive treatment for it, if needed.

Conclusively, the prevalence of ED among Saudi diabetic men is high. It increases with age, duration of diabetes and other independent risk factors including hypertension, CAD, retinopathy and nephropathy. Almost one-third of diabetic patients with ED, inform their physicians. Only a small percentage of patients receive treatment for their ED.

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**Table 1:** Severity of erectile dysfunction (ED) by demographic characteristics of diabetic patients

Demographic characteristics	No. (%) With ED	Severity of ED			P-value
		Mild	Moderate	Severe	
<b>Age (years)</b>					
≤40 (n=37)	10 (27.0)	0 (0.0)	8 (21.6)	2 (5.4)	<b>&lt;0.0001</b>
41-50 (n=45)	23 (51.1)	7 (15.6)	11 (24.4)	5 (11.1)	
51-60 (n=74)	57 (77.0)	11 (14.9)	24 (32.4)	22 (29.7)	
>60 (n=25)	25 (100.0)	0 (0.0)	11 (44.0)	14 (56.0)	
<b>Educational level</b>					
Less than secondary (n=69)	48 (69.6)	9 (13.0)	21 (30.4)	18 (26.1)	<b>0.075</b>
University (n=83)	43 (51.8)	7 (8.4)	20 (24.1)	16 (19.3)	
Postgraduate (29)	24 (82.8)	2 (6.9)	13 (44.8)	9 (31.0)	
<b>Income (SR/month)</b>					
<7000 (n=46)	31 (67.4)	4 (8.7)	16 (34.8)	11 (23.9)	<b>0.930</b>
7000-15000 (n=82)	50 (61.0)	9 (11.0)	24 (29.3)	17 (20.7)	
>15000 (n=53)	34 (64.2)	5 (9.4)	14 (26.4)	15 (28.3)	

**Table 2:** Severity of erectile dysfunction (ED) by history of smoking among diabetic patients

History of smoking	No. (%) With ED	Severity of ED			P-value
		Mild	Moderate	Severe	
Yes(n=54)	35 (64.8)	8 (14.8)	11 (20.4)	16 (29.6)	<b>&lt;0.0001</b>
No (n=78)	35 (44.9)	10 (12.8)	17 (21.8)	8 (10.3)	
Ex-smoker (<5 years) (n=12)	12 (100.0)	0 (0.0)	12 (100.0)	0 (0.0)	
Ex-smoker (>5 years) (n=37)	33 (89.2)	0 (0.0)	14 (37.8)	19 (51.4)	

**Table 3:** Severity of erectile dysfunction (ED) by medical history of diabetic patients

Medical history	No. (%)	Severity of ED	P-value
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	With ED	Mild	Moderate	Severe	
<b>Duration of diabetes</b>					
≤5 years (n=37)	2 (5.4)	1 (2.7)	1 (2.7)	0 (0.0)	
6-10 years (n=68)	39 (57.4)	9 (13.2)	23 (33.8)	7 (10.3)	
11-15 years (n=53)	51 (96.2)	8 (15.1)	20 (37.7)	23 (43.4)	
>15 years (n=23)	23 (100.0)	0 (0.0)	10 (43.5)	13 (56.5)	<b>&lt;0.0001</b>
<b>Diabetes treatment</b>					
Oral agents alone (n=77)	55 (71.4)	14 (18.2)	22 (26.8)	19 (24.7)	
Diet and/or insulin (n=25)	13 (52.0)	0 (0.0)	6 (24.0)	7 (28.0)	
Oral agents and insulin (12)	11 (91.7)	1 (8.3)	2 (16.7)	28 (66.7)	
Oral agents and diet (60)	29 (48.3)	3 (5.0)	20 (33.3)	6 (10.0)	
Oral agents, diet and insulin (n=7)	7 (100.0)	0 (0.0)	4 (57.1)	3 (42.9)	<b>&lt;0.001</b>
<b>Hypertension</b>					
Yes (n=55)	50 (90.9)	5 (9.1)	23 (41.8)	22 (40.0)	
No (n=126)	65 (51.6)	13 (10.3)	31 (24.6)	21 (16.7)	<b>&lt;0.0001</b>
<b>Dyslipidemia</b>					
Yes (n=112)	92 (82.1)	14 (12.5)	42 (37.5)	36 (32.1)	
No (n=69)	23 (33.3)	4 (5.8)	12 (17.4)	7 (10.1)	<b>&lt;0.001</b>
<b>Coronary artery diseases</b>					
Yes (n=20)	20 (100.0)	0 (0.0)	8 (40.0)	12 (60.0)	
No (n=161)	95 (59.0)	18 (11.2)	46 (28.6)	31 (19.2)	<b>0.071</b>
<b>Retinopathy</b>					
Yes (n=56)	56 (100.0)	0 (0.0)	21 (37.5)	35 (62.5)	
No (n=125)	59 (47.2)	18 (14.4)	33 (26.4)	8 (6.4)	<b>&lt;0.001</b>
<b>Nephropathy</b>					
Yes (n=48)	43 (89.6)	4(8.3)	15 (31.3)	24 (50.0)	
No (n=133)	72(54.1)	14 (10.5)	39 (29.3)	19 (14.3)	<b>&lt;0.001</b>
<b>Psychiatric therapy</b>					
Yes (n=52)	35 (67.3)	10 (19.2)	14 (26.9)	11 (21.2)	
No (n=129)	80 (62.0)	8 (6.2)	40 (31.0)	32 (24.8)	<b>0.071</b>

**Table 4:** Risk factors for depression: Results of multivariate Logistic Regression Analyses

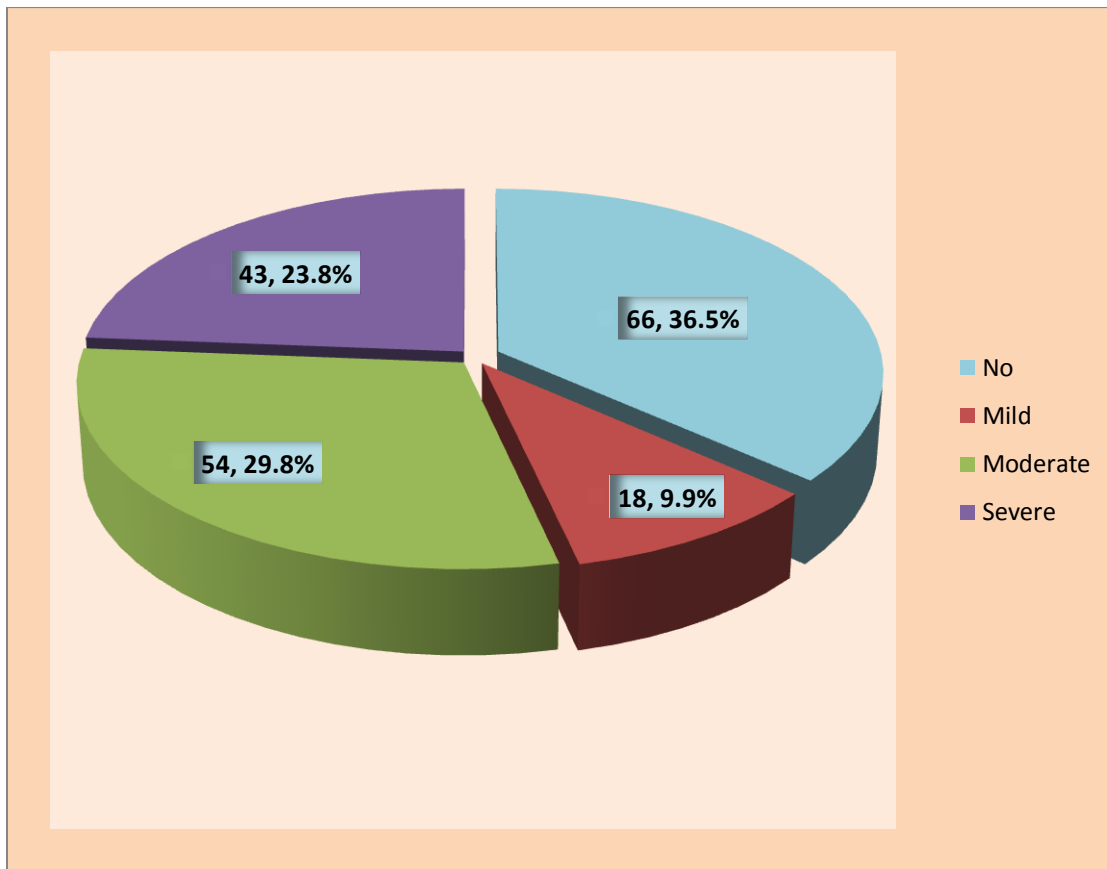
Variables	Adjusted OR	95% Confidence interval
<b>Patient's age in years</b>		
≤40†	1.0	
41-50	1.7	0.83-2.15
51-60	3.4	1.73-6.81*
>60	8.2	3.15-15.32*
<b>Duration of DM in years</b>		

≤5 †	1.0	
6-10	2.1	1.22-8.02*
11-15	4.3	1.91-21.22*
>15	7.6	4.21-62.02*
<b>Hypertension</b>	1.6	1.11-9.02*
<b>Coronary artery disease</b>	1.9	1.21-11.05
<b>Retinopathy</b>	3.1	1.96-9.41*
<b>Nephropathy</b>	2.9	1.43-11.63*

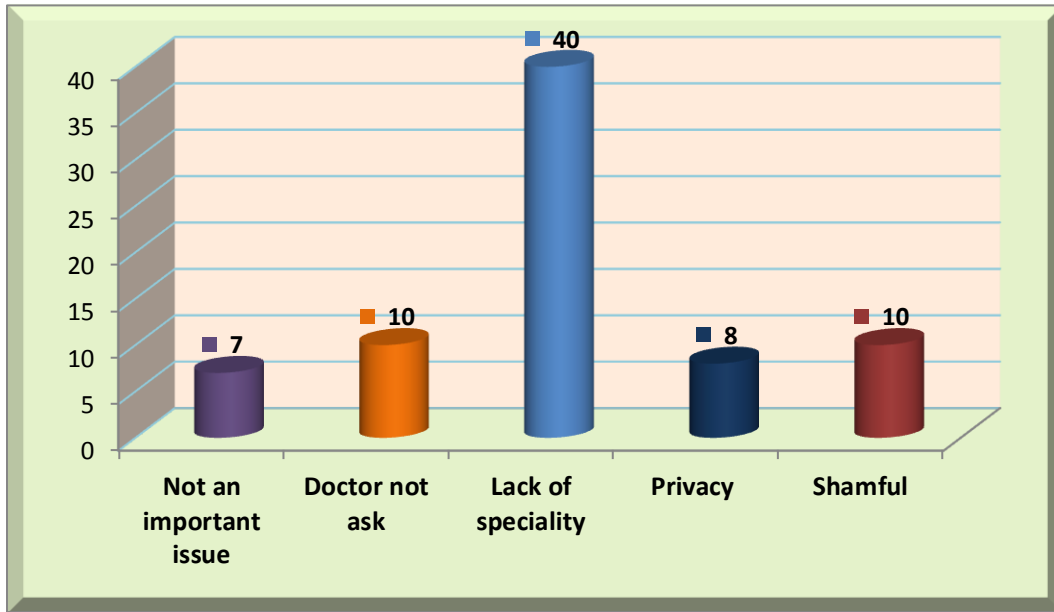
\*  $P \leq 0.05$

† Reference category

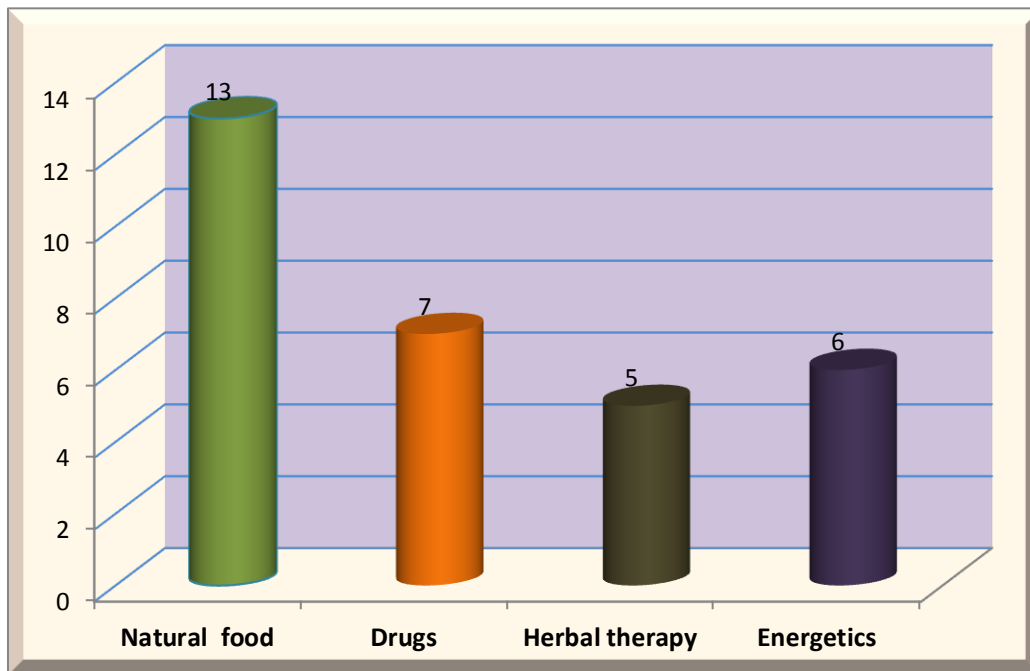
Variable excluded from the model (not significant): smoking history, DM treatment method, and dyslipidemia.



**Figure 1:** Prevalence of erectile dysfunction among diabetic patients



**Figure 2:** Reasons for not informing physicians about ED (n=75)



**Figure 3:** ED treatment among diabetic patients. (n=31)