

# An assessment of erectile dysfunction among male diabetics attending Temba Community Health Centre, Pretoria

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**Introduction:** Erectile dysfunction is common among men with diabetic mellitus and has a negative effect on their quality of life. The proportion of male diabetics who disclosed their problematic sexual performance was increasing at Temba Community Health Centre (CHC), which motivated a survey that was conducted from April 2015 till April 2016.

**Aim:** Assessment of erectile dysfunction among male diabetics attending Temba Community Health Centre.

**Setting:** Temba Community Health Centre, Pretoria, South Africa.

**Method:** A cross-sectional survey was conducted using a piloted, structured questionnaire adapted from the International Index of Erectile dysfunction (IIRF-5) questionnaire. Convenience sampling was used to select 191 participants.

**Result:** From the selected sample, 97.3% of male diabetics were suffering from erectile dysfunction. Among them, 120 (62.8%) were between 41 and 60 years of age, 96 (50.2%) were employed, 81 (42.4%) had a secondary level of education and 84 (44.4%) were married. The duration of diagnosed diabetes varied between 2 months and 564 months (42 years). Hypertension and HIV, as co-morbidities, affected 12.7% of the participants and 56% of participants consulted primarily for erectile dysfunction, not knowing that it was a complication of diabetes mellitus.

**Conclusion:** The assessment of erectile dysfunction among male diabetics attending Temba CHC in Pretoria showed that more than two-thirds of the selected sample of patients suffered from erectile dysfunction, from a mild to a severe form of the condition. Most of those participating were between 41 and 60 years old, half of them were married, have a secondary level of education and were unaware that erectile dysfunction is a complication of diabetes mellitus.

**Keywords:** assessment, diabetes mellitus, erectile dysfunction, male

## Introduction

Erectile dysfunction is common among middle-aged men globally. Some endocrine conditions, including diabetes mellitus, exacerbate the incidence and prevalence of erectile dysfunction. This is an inability to have or maintain an erection long enough for meaningful sexual intercourse.<sup>1</sup> Around 38.9% of adult male diabetics globally suffer from erectile dysfunction.<sup>2</sup> From one of the large studies, conducted in Massachusetts in 1994, the rate of erectile dysfunction was 52% of males aged between 40 and 70.<sup>3</sup> At Temba Community Health Centre (CHC), an increased number of male diabetics complained about their sexual performance; this served as the motivation for initiating this survey.

Erectile dysfunction remains one of the most common complications of diabetes mellitus and also one of the most underdiagnosed.<sup>4</sup> It affects the quality of life of those affected. Diabetic patients are advised on how to minimise the risks associated with this health condition, by maintaining their blood sugar, blood pressure and blood lipids within the normal ranges. Failure to do so may increase the risk of developing erectile dysfunction. Numerous effective therapies are available and health-care providers have to present and discuss them with the patient in order to assist affected patients.<sup>4</sup>

The guidelines on coronary artery diseases in Italy consider five risk factors, while screening health conditions that have been listed among the coronary artery group of diseases. Fewer than 45% of diabetic patients with asymptomatic coronary artery disease are missed. Erectile dysfunction was assessed among diabetic clients with and without myocardial ischaemic disease and erectile dysfunction appeared to be more prevalent

in myocardial ischaemic and, thus, in coronary artery disease. Considering this outcome, it was highly recommended to include erectile dysfunction as a risk factor in the current guidelines, in order to improve the effectiveness of the guidelines. Therefore, erectile dysfunction has been considered a screening tool for coronary artery disease in diabetes.<sup>5</sup>

While looking for the factors associated with erectile dysfunction, age and diabetes mellitus as variables showed a strong association in a study that was conducted in Sao Paulo, Brazil. Patients with renal failure and on haemodialysis presented with a high prevalence (60.3%) of erectile dysfunction, while age and diabetes status were other variables strongly associated with erectile dysfunction.<sup>6</sup>

An African study established an association between diabetes mellitus and erectile dysfunction and found that 93.3% of male diabetics have been struggling with erectile dysfunction for the past 15 years. The prevalence of erectile dysfunction was almost equal to the prevalence of diabetes mellitus in the north-west of Africa.<sup>7</sup>

In the study of the prevalence and associated risk factors for erectile dysfunction among male diabetics conducted in Tanzania, the first observation was that erectile dysfunction is a public health problem, although almost all the stakeholders neglected to consider this. Diabetic patients were found at all levels of the condition with sexual impotence from mild to severe. A relationship was established between erectile dysfunction and other variables such as advancing age, peripheral neuropathy and peripheral vascular disease. Looking at the problem of erectile

dysfunction, good management of diabetes mellitus was recommended to all stakeholders.<sup>8</sup>

Sexual functioning is very important to some of the African cultures, such as in rural Uganda. Effective erectile functioning determines a man, therefore men with erectile dysfunction consider themselves not to be men; and talk, let alone public discussion of impaired male sexual functioning, is considered a cultural taboo.<sup>9</sup>

In Durban (South Africa), the study of Black and Indian individuals suffering from diabetes for the past 10 years found high prevalence rates of microvascular complications among diabetics. Both types of diabetics were considered. Among Type 1 diabetics, both the African and Indian groups had high prevalence rates of retinopathy, proteinuria and hypertension, with high rates also noted among the Black participants. Among the Type 2 diabetics, the prevalence rates of retinopathy and proteinuria were high among the Indian participants, and Black participants had a high prevalence rate of hypertension. This study showed a significant association between retinopathy and elevated glycated haemoglobin, specifically in Type 1 diabetes mellitus. In Type 2, the association was shown between retinopathy, long duration of diabetes mellitus and elevated

blood pressure. In conclusion, the study confirmed the association between long duration of diabetes and a high prevalence of microvascular complications in South African diabetics.<sup>10</sup>

Numerous male diabetics are affected by erectile dysfunction, often more than half of the sample of participants in a study, as demonstrated in the Massachusetts cohort.<sup>3</sup> The problem can be psychological, organic or a combination of both.<sup>11</sup> It is considered organic because there is an endothelial dysfunction that is related to vascular diseases such as hypertension, ischaemic heart disease, peripheral vascular disease, diabetes mellitus and other diseases. This dysfunction easily affects the penile arteries because of their small diameter (2 millimetres or smaller). There are risk factors associated with erectile dysfunction: ageing, some medications, lifestyle (smoking, alcohol, drug abuse and obesity), some health conditions such as depression, stroke, low testosterone and others. Erectile dysfunction can pave the way for screening for cardiovascular diseases and the phosphodiesterase type 5 inhibitors (sildenafil, tadalafil and vardenafil) are effective when used for erectile dysfunction.<sup>11</sup>

The increased proportion of adult male diabetics disclosing their problematic sexual performance at Temba prompted the current study to assess erectile dysfunction among male diabetics attending Temba CHC in Pretoria.

**Table 1:** Demographic characteristics

Factor	Frequency	%
Age group (in years):		
< 30	27	14.14
31–40	30	15.71
41–50	56	29.32
51–60	64	33.51
61–70	12	6.28
71–80	2	1.05
Employment:		
Not employed	48	25.13
Employed	96	50.26
Pension	47	24.61
Education:		
None	4	2.09
Primary	36	18.85
Secondary	81	42.41
Tertiary	70	36.65
Marital status:		
Single	47	24.87
Married	84	44.44
Widowed	20	10.58
Divorced	38	20.11
Duration of diabetes mellitus (in months):		
≤ 120	162	84.82
121–240	25	13.09
241–360	3	1.57
481–600	1	0.52
Other co-morbidities:		
Hypertension	24	12.70
HIV/AIDS	24	12.70
Cancer	1	0.53
Epilepsy	3	1.59
First consulted for:		
Diabetes mellitus	83	43.46
Erectile dysfunction	108	56.54

## Methodology

### Study design

A cross-sectional survey was conducted using a piloted, structured questionnaire, adapted from the International Index of Erectile dysfunction (IIRF-5) questionnaire.

### Study population and sampling

All male diabetics 18 years and older, who attended the Temba Community Health Centre from April 2015 until April 2016, were considered. Based on the CHC's register, the total number of male diabetics or the estimated population was 200. By convenience sampling, 191 of those responded to the survey.

### Data collection

All male diabetics 18 years old or older from the consulting rooms were directed to one Community Health Worker (CHW), a member of the Ward Based Outreach Team of Temba CHC, who was trained by the principal researcher as an assistant researcher, so that he could explain the survey and its objectives to the patients. Those who consented, after receiving full information on the survey, had their medical files marked, to avoid being enrolled more than once. They were each given a questionnaire, written in two languages, English and Se-Tswana, since these are the two spoken languages in the research area. There were two parts to the questionnaire: the demographics and the five questions from the International Index of Erectile Function (IIEF-5). While answering the questionnaire, participants were assisted by the CHWs when needed. At the end of the day, all the completed questionnaires were collected by the principal researcher. The data collection tool was piloted at Phedisong 4 CHC in Ga-Rankuwa prior to the main study. The choice of this CHC was motivated by the fact that people attending the two CHCs share the same characteristics, such as culture, language, dietary habits, etc. The two CHCs are in different sub-districts of Pretoria.

### Data analysis

Data were captured on an Excel spreadsheet (Microsoft Corp, Redmond, WA, USA) and analysed using SAS software (SAS Institute Inc, Cary, NC, USA), Release 9.4. Descriptive statistics were used to analyse the data. Results, in frequency and percentage, are presented in tables. The scales used in the assessment, using the IIEF-5, are as follows: 22–25: No erectile dysfunction, 17–21: Mild erectile dysfunction, 12–16: Mild to moderate erectile dysfunction, 8–11: Moderate erectile dysfunction and 5–7: Severe erectile dysfunction. The sum of the ordinal responses from the five items in the IIRF-5 constituted the scoring.

### Ethical considerations

Permission to conduct the research at Temba CHC was granted by the centre's Facility Manager and also by Sefako Makgatho University Research Ethic Committee (SMUREC) (Clearance number: SMUREC/M/29/2015: R). Confidentiality and beneficence were applied to all participants. No identity appeared on the questionnaire and any patients who declined to participate in the study did not have his medical care compromised. Participants who did not feel comfortable with the study had the option to quit at any time during the research process.

## Results

### Demographic characteristics

There were 191 participants in the survey; the youngest participant was 19 and the oldest 80 years old. Some 33% were in the age group 51–60, followed by 29.32% in the age group 41–50. Ninety-six (50.26%) were employed. Eighty-one (42.41%) had a secondary level of education. Forty-four (44.44%) were married. In total, 162 (84.82%) had had diabetes mellitus for a period of between 4 and 120 months. Regarding other co-morbidities, an equal number of participants (24, 12.70%) had hypertension and HIV/AIDS. One participant had cancer and one suffered from epilepsy. Most of the participants reported that their first reason for consultation was because of sexual impotence (56.54%), rather than the 83 (56.54%) who came because of classical signs of diabetes mellitus (see Table 1).

In the selected sample, it was found that 49.7% of participants had moderate confidence, 48.6% had low penetration, 53.4% had low maintenance, 56.0% had low difficulty and 49.7% had low satisfaction (see Table 2).

In the selected sample, 51.3% had mild to moderate erectile dysfunction, followed by 35.6% with moderate erectile dysfunction. The selected sample showed 2.62% with no erectile dysfunction while 97.38% of participants experienced erectile dysfunction.

**Table 3:** Scoring of erectile dysfunction in frequency and percentage

Factor	Frequency	%
No erectile dysfunction	5	2.62
Mild erectile dysfunction	15	7.85
Mild to moderate erectile dysfunction	98	51.31
Moderate erectile dysfunction	68	35.60
Severe erectile dysfunction	5	2.62

A high rate of erectile dysfunction was noted among the married diabetic participants: 22% had mild to moderate erectile dysfunction, 16% had a moderate rate of dysfunction and 2% of the participants experienced severe erectile dysfunction. No erectile dysfunction was found among widowers and divorced diabetic participants.

Using a chi-square test while comparing the erectile dysfunction score with the marital status, the *p*-value was 0.0268 (< 0.05), indicating statistical significance. There was no significance for other demographic characteristics (see Table 4).

While comparing the demographics with the different disorders that explained the erectile dysfunction, it was found that the duration of the disease seems to be associated with issues such as confidence, penetration, maintenance and satisfaction except from difficulty in maintaining an erection.

### Discussion

This study highlighted the gravity of the problem in the Temba community where 97.3% of diabetic participants were found to have erectile dysfunction. This is much higher than the global rate of 38.9% of diabetics who suffer from erectile dysfunction.<sup>1</sup> The current study also showed the peak of the condition to occur around 41–60 years of age, which is included in the age category referred to in the Massachusetts study done in 1994.<sup>3</sup>

Erectile dysfunction has to be considered a serious public health problem since it affects the quality of life of diabetic patients. Although the target of this current study did not screen for coronary artery disease as was the case in Italy,<sup>5</sup> the association that has been established between the duration of diabetes mellitus and the occurrence of erectile dysfunction still permits the screening of coronary artery disease, while considering the multiple vascular impairments that may occur in a longstanding diabetes mellitus patient.<sup>10</sup>

Erectile dysfunction, as a complication of diabetes mellitus, has been associated with age, as found in many studies such as

**Table 2:** Frequency and percentage of different levels of erectile dysfunction

Factor	Very low Frequency (%)	Low Frequency (%)	Moderate Frequency (%)	High Frequency (%)	Very high Frequency (%)	Total Frequency (%)
Confidence (can achieve an erection)	6 (3.14)	70 (36.65)	95 (49.74)	14 (7.33)	6 (3.14)	191 (100)
Penetration (have enough erection for penetration)	3 (1.57)	93 (48.69)	77 (40.31)	14 (7.33)	4 (2.09)	191 (100)
Maintenance (can maintain erection after penetration)	14 (7.33)	102 (53.40)	61 (31.94)	14 (7.33)	0 (0.00)	191 (100)
Difficulty (how difficult to maintain erection)	12 (6.28)	107 (56.02)	59 (30.89)	12 (6.28)	1 (0.52)	191 (100)
Satisfaction (How often was the erection satisfactory?)	28 (14.66)	95 (49.74)	55 (28.80)	10 (5.24)	3 (1.57)	191 (100)

**Table 4:** Comparison of erectile dysfunction with demographic characteristics

Factor	Single Frequency (%)	Married Frequency (%)	Widower Frequency (%)	Divorced Frequency (%)	Total Frequency (%)
No erectile dysfunction	3 (1.59)	2 (1.06)	0 (0.00)	0 (0.00)	5 (2.64)
Mild erectile dysfunction	6 (3.17)	6 (3.17)	0 (0.00)	3 (1.59)	15 (7.93)
Mild to moderate erectile dysfunction	27 (14.29)	42 (22.22)	5 (2.65)	22 (11.64)	96 (50.8)
Moderate erectile dysfunction	11 (5.82)	30 (15.87)	14 (7.41)	13 (6.88)	68 (35.98)
Severe erectile dysfunction	0 (0.00)	4 (2.12)	1 (0.53)	0 (0.00)	5 (2.68)
Total	47 (24.87)	84 (44.44)	20 (10.59)	38 (8.47)	189 <sup>a</sup> (100)

<sup>a</sup>Two missing values.

one from Sao Paulo, Brazil.<sup>6</sup> The current study showed the peak of the condition from around 41 up to 60 years of age; more male diabetics can develop erectile dysfunction, up to 62.8%, as referenced; but analysis did not find any association between age and erectile dysfunction.

An outcome similar to that of the current study was observed in Morocco,<sup>7</sup> in the sense that there was a high prevalence of erectile dysfunction (93.3% in Morocco and 97.3% in Temba) among the diabetic participants. However, according to the first reasons for consultation, discordance has been noticed between the two studies while comparing participants who complained about signs of erectile dysfunction and those who presented with symptoms of uncomplicated diabetes mellitus (thirst, polyuria and dysphagia). In the Morocco study there was equity, while in Temba more participants consulted for the first time because of symptoms related to erectile dysfunction (56.4%).

Looking at the distribution of participants in terms of the severity of the condition, male diabetics in Temba are spread over all the levels of erectile dysfunction as are Tanzanians,<sup>8</sup> with a particularity that in Temba many participants were found to have mild to moderate erectile dysfunction (Table 3).

In Tanzania, as in Temba, South Africa, participants presented with all levels of erectile dysfunction, using the IIF-5 screening criteria. Table 4 shows the number of Temba participants across all levels of erectile dysfunction (mild, moderate and severe forms of the condition), as also demonstrated in Tanzania.<sup>8</sup>

In Durban, South Africa, a study demonstrated the association between longstanding diabetes mellitus and the occurrence of microvascular complications.<sup>10</sup> This has been supported by the Temba study, which noted the same association.

Without touching on the pathophysiology, the treatment and risk factors as was done in a review article,<sup>11</sup> the Temba study has found that marital status and the duration of diabetes were associated with erectile dysfunction.

### Study limitations

This survey did not include a certain number of age groups such as older than 80 and younger than 18 years, for ethical purposes. Knowing that diabetes mellitus affects all ages, this study could have covered teenagers and all the elderly living in Temba, to deliver more relevant data on erectile dysfunction in Temba, Pretoria.

### Strengths of the study

The source of the information on erectile dysfunction is the participants, using primary data.

### Conclusion

The assessment of erectile dysfunction among male diabetics attending Temba CHC in Pretoria showed that more than two-thirds of participants in the selected sample suffered from erectile dysfunction, from a mild to a severe form of the condition. Many of them were between 41 and 60 years of age; half of them were married, with a secondary level of education and were unaware that erectile dysfunction is a complication of diabetes mellitus.

### Recommendations

Comprehensive management of diabetes mellitus, at primary health care level, must emphasise the importance of education on early diagnosis and control of diabetes mellitus, in order to minimise the occurrence of erectile dysfunction.

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