

Research Article**ASSESSMENT OF KNOWLEDGE AND PERCEPTION OF ERECTILE DYSFUNCTION AMONG DIABETIC AND NON-DIABETIC PATIENTS AT A UNIVERSITY HEALTH CENTER IN MALAYSIA**

*MOHAMED AZMI HASSALI, Senior Lecturer, Discipline of Social and Administrative Pharmacy, School of Ph⁷ Sciences, Universiti Sains Malaysia, PENANG, Malaysia, Email: azmihassali@usm.my
ASRUL AKMAL SHAFIE, Lecturer, Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, PENANG, Malaysia
YASEEN KHALID, Postgraduate Student, Discipline of Clinical Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, PENANG, Malaysia
RANJEEV HARI, Research Officer, Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, PENANG, Malaysia

ABSTRACT

The aim of this study is to evaluate the knowledge and perceptions of diabetics and non-diabetics at Universiti Sains Malaysia (USM) main campus towards erectile dysfunction (ED). A cross-sectional survey using 40 items questionnaire was conducted in USM main Campus and at the Diabetic Clinic in the main campus. By the end of the study period a total of 200 individuals were surveyed, 52 of them were diabetics and the rest were non-diabetics. The mean total knowledge score obtained by diabetics was significantly higher, (63.7% of the maximum possible total knowledge score) than non-diabetics score (53.8 % of the maximum possible total knowledge score), $P=0.002$. Diabetics scored significantly lower regarding perception towards sexual activity, (65.1% of the maximum possible score) than non diabetics (70% of the maximum possible score), $P=0.012$. Diabetic patients scored none significantly higher scores regarding perception towards effect of ED on quality of life, (61.3% of the maximum possible score) compared with non-diabetics (59.7 % of the maximum possible score) $P=0.332$. Overall, the finding of this study suggested that health care professionals should be more proactive in disseminating health information about ED to the public in order to increase their knowledge and awareness on the disease.

KEYWORDS Erectile dysfunction, Diabetics, Non diabetics, Knowledge & Perception

INTRODUCTION

Erectile Dysfunction (ED) impairs the quality of life, and is associated with depression, increased anxiety and poor self-esteem in affected patients¹. Despite these effects, ED seems to be a very sensitive issue and most individuals do not wish to be made aware¹. A man may have feelings of guilt because he no longer fulfills what he views as his role as a man. It is also common for a man to fear that impotence is the first sign of his physical decline toward old age and death. Most men, even when they admit there is ED problem, are reluctant to ask for help². ED can result from poor physical health or poor psychological health or both. The principal risk factors are Diabetes mellitus, heart disease, hypertension, and prostatic

hypertrophy³ As the incidence of diabetes, which is one of the commonest causes of impotence, is rising; doctors are likely to spend more time in the diagnosis and management of erectile dysfunction. Most men experience this at some point in their lives, usually by age 40⁴. Erectile dysfunction tends to be more common and severe with age. Several studies have examined ED by diabetes type and duration, but few have directly compared the prevalence of this condition in men with and without diabetes^{5,6}. Although psychogenic factors, such as performance distress, can contribute to its etiology, ED in diabetic patients is mainly related to organic causes, such as vasculogenic and neurological abnormalities. Despite the high prevalence of this condition in patients with diabetes,

little is known regarding how diabetic subjects with ED differ from the general population of impotent men. Comparison of randomized clinical trials assessing the efficacy of sildenafil show that diabetic men with ED differ from the general population of impotent men in their response to oral therapy. However, it is not known whether diabetic men present with worse sexual dysfunction than impotent patients from the general population or whether ED has a different impact on quality of life in diabetic men when compared with non diabetic patients⁷.

Indeed, ED patients with both type 1 and type 2 diabetes can be satisfactorily treated. Treatment is difficult, however, because of complications from diabetes. Those patients with more than two complications have only a 43% probability of improved erections compared with 69% of patients with diabetes and no diabetic complications. ED is 3-5 times more common in diabetics, and it affects 30 to 50% of men with DM⁸.

In the Massachusetts Male Aging Study (MMAS), ED in diabetes was strongly correlated with glycaemic control, duration of disease and diabetic complications. The incidence increased with increasing age, duration of diabetes and deteriorating metabolic control, and was higher in individuals with type 2 diabetes than those with type 1⁹.

Recent pharmacological advances have stimulated a great interest in ED, generating new data concerning its prevalence, treatment, and costs. Nevertheless, even in randomized clinical trials, little attention has been given to quality of life. Instead, attention has been focused mainly toward evaluation on patient and partner satisfaction for sexual life.

Furthermore, most of the data from both randomized trials and observation studies do not refer specifically to patients with diabetes. Therefore, little is known about

the impact of this complication on broader measures of subjective well-being and quality of life, particularly among patients with type 2 diabetes, for whom only few data derived from small samples are available¹⁰. The objective of this study is to compare the knowledge, and perceptions of both diabetics and non diabetics towards erectile dysfunction in USM main campus.

METHODS

A cross-sectional survey was conducted at USM main campus and at the USM Health Center's Diabetic Clinic. Inclusion criteria for diabetics and non diabetics were males, age more than 18 years. Both Type I and II diabetic patients were included in the survey. Exclusion criteria were female patients and respondents, respondents age less than 18 years, individuals with significant cognitive impairment and psychiatric comorbidity. Data collection started in early December 2006 and was completed at end of January 2007. Approval to conduct the study at the health centre was obtained from the director of USM Health Center. All the information about the study participants were treated confidentially and reporting of the findings were done in compliance with the ethical requirements which had been outlined by the director. As this study is exploratory in nature, convenience sampling of diabetic patients from USM diabetic clinic and non diabetics from selected areas in USM main campus was used. At the end of the study period a total of 200 individuals surveyed and from this number only 52 of them were diabetics and the rest were non-diabetic (N= 148).

Data collection

A questionnaire was developed based on the literature review from studies previously performed from different parts of the world and it was pre-tested for content validity before the commencement of the study. A pilot study was undertaken on 20 individuals from USM main campus and the questionnaire was modified accordingly based on their comments and understanding. Verbal consent was obtained for both diabetic and non diabetic people prior to the distribution of the questionnaire. The questionnaires were self administered by the participants themselves. The questionnaire is divided into five parts, namely: demographic data (7 items), knowledge regarding causes & risk factors of ED (13 items), knowledge regarding prevention of ED (6 items), perception regarding sexual activity (7 items), perception regarding the effect of ED on quality of life (7 items). In knowledge sections, participants were awarded one point for each correct answer and zero for wrong or don't know

analyze the data. Student-t test was used when comparing the mean differences between knowledge and perceptions scores between the two groups. Level of significance for all statistical inferences was set at $P < 0.05$.

RESULTS

The total number of our sample was 200, whereby 26% were diabetic and 74% were non-diabetic. The median age of the sample studied was 40-49 years old, with the majority of them are Malay (85% of our sample). There was insignificant demographic variability. The majority of diabetic patient were diagnosed with diabetes with less than two years.

Diabetic patients were significantly more knowledgeable regarding risk factors and preventive measures than non diabetic people (Table 1). Two major misconceptions were found among diabetics and non diabetics were: firstly, analgesics and antibiotics can prevent ED (63% and 79%) and secondly, ED is a contagious disease (65% and 44%)

There was a significant difference in

Table1: Comparison between diabetics & non diabetics according to mean scores of knowledge & perception

+	Maximum possible score	Diabetics Mean \pm SD	Non diabetics Mean \pm SD	P value
		Knowledge scores		
A) Causes & risk factors	13	7.60(2.66)	6.91(3.68)	0.154
B) Prevention	6	4.52(1.11)	3.32(1.63)	< 0.001
C) Total knowledge	19	12.11(3.20)	10.23(4.73)	0.002
		Perception scores		
A) Sexual activity	22	14.33(2.46)	15.38(2.61)	0.012
B) Effect of ED on life	32	19.60(2.80)	19.09(3.36)	0.332
C) Total perception	54	33.92(4.02)	34.08(5.51)	0.850

response. In perception sections, Likert scale response format was used.

All data were analysed using SPSS version 15.0 software package. Both descriptive and inferential statistics were used to

satisfaction with sexual life between diabetics and non diabetics ($p < 0.001$) as diabetics were less satisfied with their sexual life. The majority of the diabetics and non diabetics people (50% and 62%)

feel less comfortable to discuss about ED with their primary physicians. There was significant difference between diabetic and non diabetic people regarding the degree of erection and number of intercourse/month ($p < 0.001$, $p = 0.005$ respectively), as diabetics showed lower degree of erection and less number of intercourse/month. Higher mean total score of knowledge performed by diabetics 12.11 (3.20) compared with non diabetic people 10.23 (4.73) ($P = 0.002$) (maximum = 19) was also observed. Diabetics was found to have significantly lower perception towards sexual activity ($P = 0.012$) and higher perception regarding the effect of ED on quality of life ($P = 0.332$). There was significant difference between diabetics and perception of sexual activity ($P = 0.019$), as those with longer duration with diabetes have lower scores of perception of sexual activity and higher scores of effect of ED on their quality of life. Most diabetic patient (75%) ask for information or inquiries directly to the health care professionals as there was significant association between diabetes and source of sexual information ($P < 0.001$) as shown in Figure 1. Besides that, there was significant difference between diabetic and non diabetic people regarding the degree of erection and monthly intercourse frequency ($P < 0.001$, $P = 0.005$ respectively). It was noted that there was also significant difference between the duration of living with diabetes and their confidence to keep erection ($P = 0.018$), with reduction in erection level for patients with longer duration of diabetes.

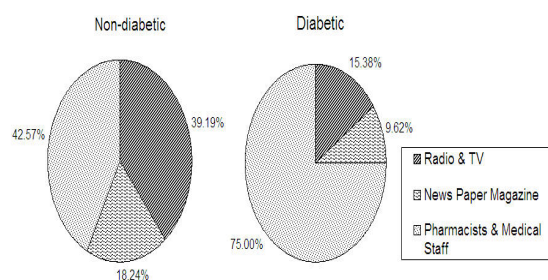


FIG1: Distribution of diabetics and non diabetics according to source of sexual information

DISCUSSION AND CONCLUSION

DISCUSSION

In terms of knowledge, the regular lessons provided in diabetic clinic in USM main campus and their interest to know more about the complications for their disease resulted in the higher mean total score of knowledge among by diabetics. In addition, people suffering from any disease will know more about their problems than do others. It was therefore not strange that people with more than 10 years with diabetes to have higher knowledge scores compared to other diabetics with fewer periods with diabetes. These results are consistent with many other studies which showed that impotent men with diabetes presented with worst ED than nondiabetic men with ED and this resulted in worse disease-specific health related QoL in the diabetic men¹¹. Also erectile dysfunction is extremely common among type 2 diabetic patients and associated with poorer quality of life¹². Dispersal of health information is critical and most diabetics obtain the information from health care professionals. This indicates the important role of health professionals and they must be involved in health education to the public, particularly for diabetic education. Reading educational material and techniques should be designed in suitable way for less educated, non English speaking & low income populations. For example, health professionals might supply the materials with other aids such as personal instructional sessions or audiovisual aids. Besides that, diabetics showed lower degree of erection and less monthly intercourse frequency and these results are similar with the findings from another study by Penson et al which showed that impotent men with diabetes present with worse ED than nondiabetic men with ED¹³.

Duration of living with diabetes seem to have an impact on the confidence to maintain an erection and it corresponds well with the results of another study conducted by Bacon *et al* which showed duration of diabetes was positively associated with increased risk of ED⁵. It was non- unexpected to find significant difference towards satisfaction with recent sexual life between diabetics & non diabetics with less satisfaction with diabetic people ($P<0.001$).

It was interesting to find the majority of diabetics and non diabetics correctly answered the question related to the role of wife in dissolving ED and keeping successful relations with husband. This indicated the importance of educating wives regarding management of their relationship with husbands that suffer from ED.

The majority of respondents from diabetics or non diabetics have awareness regarding the danger of smoking and alcohol as risk factors for ED and usage of traditional herbs for treating ED. In a qualitative study, Malays show preference for traditional medicine in treating ED¹⁵. Also, the respondents from diabetics and non diabetics were informed regarding the effect of ED & the possibility of causing other medical problems, the majority of respondents correctly answered the role of exercise & weight reduction in preventing ED, however it was strange that the majority of both diabetics & non diabetics believe that ED is contagious & analgesics and wide spectrum antibiotics may prevent ED. Diabetics appeared to be more embarrassed in asking their doctors regarding their ED problem compared to non diabetics, though it was not statistically significant ($P=0.405$). This indicates the important role of doctors in assessing diabetic patients' sexual health.

The findings of this study should encourage health care planners to find ways of increasing public awareness regarding ED in diabetic. However, the study time period was short, resulting in a small study sample size. In addition, the

study used non-probability sampling technique (convenience sampling) that could decrease the sensitivity and generalizability of the results. Furthermore in the present study, the co-morbidities (other than diabetes mellitus) that may cause ED and worsening the quality of life were not determined. It was recommended that a similar study using respondents from different settings should be performed with more in-depth scope together with a larger sample size in order to confirm the findings of this study.

CONCLUSION

In short, this study showed that there is an urgent need to increase awareness and educate the community towards erectile dysfunction. Although diabetic patients are more knowledgeable regarding ED, they still suffer with lower perception towards sexual activity and less satisfaction with their sexual life. Their perception regarding the effect of ED on their quality of life is more than that of non diabetics. Health care professionals should be more active in promoting health information about ED, and the information should be accessible by all.

REFERENCES

1. McKinlay JB. The worldwide prevalence and epidemiology of erectile dysfunction. *International Journal of Impotent Research* 2000; 12(14):6-11.
2. De Berardis G, Franciosi M, Belfiglio M, Di Nardo B, Greenfield S, Kaplan SH et al. Quality of Care and Outcomes in Type 2 Diabetes (QuED) Study Group. Erectile dysfunction and quality of life in type 2 diabetic patients: a serious problem too often overlooked. *Diabetes Care* 2002; 25(2):284-291.
3. Siu SC, Lo SK, Wong KW, Wong YS. Prevalence of and risk factors for erectile dysfunction in Hong Kong diabetic patients. *Diabetic Medicine* 2001; 18(9):732-738.
4. McCulloch DK, Campbell IW, Wu FC, Prescott RJ, Clarke BF. The prevalence of diabetic impotence. *Diabetologia* 1980; 18(4):279-283.
5. Bacon CG, Mittleman MA, Kawachi I, Giovannucci E, Glasser DB, Rimm EB.

- Sexual function in men older than 50 years of age: results from the health professionals' follow-up study. *Annals of Internal Medicine* 2003; 139:161-168.
6. Bacon CG, Hu FB, Giovannucci E, Glasser DB, Mittleman MA, Rimm EB. Association of type and duration of diabetes with erectile dysfunction in a large cohort of men. *Diabetes Care* 2002; 25(8):1458-63.
 7. Rendell MS, Rajfer J, Wicker PA, Smith MD. Sildenafil for Treatment of Erectile Dysfunction in Men with Diabetes. A Randomized Controlled Trial. The Sildenafil Diabetes Study Group. *Journal of American Medical Association* 1999; 281:421-426.
 8. Fedele D, Bortolotti A, Coscelli C, Santeusanio F, Chatenoud L, Colli E et al. Erectile dysfunction in type 1 and type 2 diabetics in Italy. On behalf of Gruppo Italiano Studio Deficit Erettile nei Diabetici. *International Journal of Epidemiology* 2000; 29(3):524-531.
 9. Rosalyn JW. Dimensions of Sexual Health. *The American Journal of Nursing* 1979; 79(9):1568-1572.
 10. O'Donnell AB, Araujo AB, McKinlay JB. The health of normally aging men: The Massachusetts Male Aging Study (1987-2004). *Experimental Gerontology* 2004; 39(7):975-984.
 11. Carson CC. Erectile dysfunction in the 21st century: whom we can treat, whom we cannot treat and patient education. *International Journal of Impotent Research* 2002; 14(1):S29-S34.
 12. De Berardis G, Pellegrini F, Franciosi M, Belfiglio M, Di Nardo B, Greenfield S et al. Longitudinal assessment of quality of life in patients with type 2 diabetes and self-reported erectile dysfunction. QuED (Quality of Care and Outcomes in Type 2 Diabetes) Study Group. *Diabetes Care* 2005; 28(11):2637-2643.
 13. Bacon CG, Mittleman MA, Kawachi I, Giovannucci E, Glasser DB, Rimm EB. Sexual function in men older than 50 years of age: results from the health professionals' follow-up study. *Annals of Internal Medicine* 2003; 139:161-168.
 14. Penson DF, Latini DM, Lubeck DP, Wallace KL, Henning JM, Lue TF. Do impotent men with diabetes have more severe erectile dysfunction and worse quality of life than the general population of impotent patients? Results from the Exploratory Comprehensive Evaluation of Erectile Dysfunction (ExCEED) database. *Diabetes Care* 2003; 26:1093-1099.
 15. Low WY, Wong YL, Zulkifli SN, Tan HM. Malaysian cultural differences in knowledge, attitudes and practices related to erectile dysfunction: focus group discussions. *International Journal of Impotence Research* 2002; 14(6):440-445.