

Full Length Research Paper

Psychosocial survey on erectile dysfunction among diabetic and non-diabetic attributes, Penang, Malaysia

Syed Wasif Gillani^{1*}, Syed Azhar Syed Sulaiman¹, Yaseen Khalid¹, Yelly Oktavia Sari^{2,3}, Mirza Baig⁴ and Atif Amin⁵

¹School of Pharmaceutical Sciences, Universiti Sains Malaysia, Pulau Pinang, Malaysia.

²Faculty of Pharmacy, Andalas University, Padang 25163, Indonesia,

³Discipline of Clinical Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia.

⁴Department of Clinical Pharmacy, Aimst University, Kedah, Malaysia.

⁵Faculty of Medicine and Health Sciences, Universiti Sultan Zainal Abidin.

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Sex is a natural and basic drive of human beings. In Malaysia, erectile dysfunction (ED) is a common problem, affecting 16 to 47% of men above 40 years old. Erectile dysfunction (ED) is a common complication of diabetics, with prevalence ranging between 27 and 75%. Knowledge and perception are essential precursors of ED related quality of life. A cross-sectional study was conducted in Pulau Pinang, Malaysia, to produce the preliminary information to compare the knowledge and the perception of diabetic and non diabetic population towards sexual activity and the effect of ED on quality of life. Population based survey includes the entire male respondent in the community with age of 18 years and above. Investigator personally approached the respondents and asked them to complete self administered and anonymous pre-validated questionnaire. Statistical package for social sciences (version 15®) was used to analyze the data by adopting chi-square, univariate and multivariate analysis, ANOVA, T-test techniques, respectively. Data was collected from 1700 males aged between 20 years and above with response rate of 88.35%. The mean total knowledge score obtained by diabetics was significantly ($p<0.001$) higher (63.7% of the maximum possible total knowledge score) than non-diabetics score (53.8 %). Diabetics scored significantly ($p=0.021$) lower, regarding perception towards sexual activity (65.1%) than non diabetics (70%), also, diabetics scored non significantly higher scores regarding perception towards effect of ED on quality of life (61.3%) compared with non diabetics (59.7%). Mean score of total knowledge of non-diabetics was 10.23 ± 4.73 (that is, 53.8%) with maximum possible score of 19, while mean score of total perception of non-diabetics was 34.08 ± 5.51 (that is, 63.1%) with maximum possible score of 54. There was significant association between diabetics using medicine for ED ($p<0.001$). Viagra® (Sildenafil) was the most commonly used medicine between diabetics and non diabetics. It was concluded that although diabetics patients are more knowledgeable regarding ED, they have 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.

Key words: Diabetics mellitus, perception and quality of life, erectile dysfunction, erectile and diabetics, diabetics and quality of life, erectile dysfunction treatment.

INTRODUCTION

Sex is a natural and basic drive of human beings. A person's total sexual experience however depends on the integration of genetic, physiological, biological and

psychosocial influences (Feldman et al., 1994; Mckinley, 2000). Patients with ED suffer from a multitude of problems, ranging from depression, loss of self-esteem, worthlessness, workplace inattention and concentration loss, once they experience a failure to erect (McCulloch et al., 1980). Little is known about impact of erectile dysfunction and the effect of its subsequent treatment on

*Corresponding author. E-mail: wasifgillani@gmail.com.

the lives and wellbeing of patients (Feldman et al., 1994; Tarnbi, 1998). The International Index of Erectile Function (IIEF) questionnaire is an important screening tool used by doctors in this regard. The questionnaire consists of five items with fifteen questions concerning erectile function, orgasmic function, sexual desire, intercourse satisfaction and overall satisfaction (Rosen et al., 1997).

Medications for hypertension, cardiovascular disease, and depression may also cause or exacerbate ED, and there is strong evidence suggesting that cigarette smoking and heart disease contribute to the disorder (Siu et al., 2001). The Massachusetts Male Aging Study, an ongoing epidemiologic study of health and aging in men begun in 1987, reveals a 99% age-adjusted probability of the incidence of ED in smokers treated for heart disease (Fedele et al., 2000). Other risk factors include excessive alcohol consumption, bicycling more than three hours a week, and a sedentary lifestyle (Siu et al., 2001).

In Malaysia, erectile dysfunction is a common problem, affecting 16 to 47% of men above 40 years old. Many troubled men with erectile dysfunction do not complain or come forth and seek medical help although, a large proportion of them will admit to having the problem on direct questioning. In a recent study, it is estimated that up to 1.68 million Malaysian men above the age of 40 years may be experiencing some degree of erectile dysfunction (Tarnbi, 1998). 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 patients (Siu et al., 2001; Fedele et al., 2000; Bacon et al., 2002).

Several studies have examined ED by diabetics' type and duration, but few have directly compared the prevalence of this condition in men with and without diabetics (Rendell et al., 1999; Goldstein et al., 1999). Therefore, little literature is available about knowledge and the perception of general Malaysian population, particularly among patients with type II diabetics mellitus; only limited data has been derived from small sample studies. Main objectives of the study were to evaluate the knowledge and to compare the knowledge of diabetics with non-diabetics respondents on risk factors and prevention of ED, also to evaluate the perception and to compare the perception of diabetics with non-diabetics participants towards sexual activity and, the effect of ED on quality of life.

MATERIALS AND METHODS

A cross-sectional, descriptive study was conducted in Pulau Pinang during November 2009 to March 2010. Pulau Pinang is one of the fourteen states located in the northwest of Malaysia and comprises of the mainland and Penang Island. Its population is 12.65 million. Different ethnic groups inhabiting the state are Malays (42.5%), Chinese (46.5%), Indians (10.6%), and other minorities (0.4%)

(Department of Statistics, Malaysia, 2001).

Cluster random sampling technique was employed for the selection of participants in the community. Participants were approached in plazas, malls, shopping marts and invited to take part in this survey. To avoid bias, all the three main ethnic groups were included according to the racial distribution in the country. Verbal consent was taken from the respondents and instructions were given to fill the questionnaires. All questionnaires were anonymous, so, to maintain the privacy, participants were asked to fold the questionnaire after filling. Ethical approval was obtained from the Social and Behavioral Research Ethics Committee, University Sains Malaysia (USM). The face and content validity was done by the professionals at the Disciplines of Social and Administrative Pharmacy, Science University, Malaysia and by the Department of Biostatistics, General Hospital Pulau Pinang.

A multilingual (English, Malay, Chinese, Tamil) was prepared with the collaboration of centre of languages and translations, University Sains Malaysia. The questionnaire was divided into six parts: Demographic data (7 parameters), knowledge regarding causes and risk factors of ED (13 questions), knowledge regarding prevention of ED (6 questions), perception regarding sexual activity (7 questions), perception regarding the effect of ED on quality of life (7 questions), treatment of ED (4 questions). In knowledge sections, participants were awarded one point for each correct answer and zero for wrong or don't know responses. In perception sections, Likert scale was used. Age above and equal to 18 years enrolled in this study design.

The reliability scale was applied to all the variables comprising the knowledge domain, that is, knowledge regarding causes and risk factors of ED, prevention, and perception regarding sexual activity, effect of ED on quality of life and treatment of ED. The reliability and internal consistency of the tool were estimated on the basis of Cronbach's α (= 0.79). Using face and content validation technique of the scale. Results were analyzed statistically using statistical package for the social sciences (SPSS) for windows version (15®). Both descriptive and inferential statistics were used to analyze the data. The following statistical tests were used when appropriate: Chi-square test, student-T test, Mann-Whitney U test, Kruskal-Wallis test and ANOVA. For the mentioned statistical tests and also for univariate and multivariate analysis, the statistical significance level used was kept at 0.05.

RESULTS

A population of 1924 from the community was surveyed. The responses of 1700 (88.35%) participants were valid; the remaining 224 (11.64%) survey forms were rejected because they were not completely filled. The mean age of the study participants was recorded as 47.5 years. The socio-demographic characteristics of the participants are shown in Tables 1, 2 and 3. The erection function or dysfunction was classified on 5-Likert scale and about 70.6% participants reported erectile functioning from moderate to very low. The responded values were high 500 (42.7%), moderate 726 (16.2%), low 275 (16.2%) and very low 199 (11.7%) respectively.

The mean score of knowledge of causes and risk factors is 7.09 ± 3.45 (that is, 54.5%) with maximum possible score of 13. The mean score of knowledge of prevention of ED is 3.63 ± 1.60 (that is, 60.5%) with maximum possible score of 6. Mean scores of perception towards sexual activity is 15.11 ± 2.61 (that is, 68.7%) with maximum possible score of 22. Mean scores of

Table 1. Mean score (SD) for perception towards sexual activity for different reproductive organ sizes.

| Characteristics | N | Mean | Standard deviation | Significance |
|-----------------|------|-------|--------------------|--------------|
| Small | 94 | 12.83 | 2.05 | 0.000 |
| Average | 1266 | 14.91 | 2.24 | |
| Large | 340 | 16.86 | 3.13 | |

Table 2. Comparison between diabetics and non diabetics according to mean scores of knowledge and perception.

| | Maximum possible score | Diabetics (Mean ± SD) | Non diabetics Mean ± SD | P value |
|-------------------------|------------------------|-----------------------|-------------------------|----------|
| Knowledge | | | | |
| Causes and risk factors | 13 | 7.60 ± 2.66 | 6.91 ± 3.68 | 0.274 NS |
| Prevention | 6 | 4.52 ± 1.11 | 3.32 ± 1.63 | < 0.001 |
| Total knowledge | 19 | 12.11 ± 3.20 | 10.23 ± 4.73 | 0.002 |
| Perception | | | | |
| Sexual activity | 22 | 14.33 ± 2.46 | 15.38 ± 2.61 | 0.021 S |
| Effect of ED on life | 32 | 19.60 ± 2.80 | 19.09 ± 3.36 | 0.342 NS |
| Total perception | 54 | 33.92 ± 4.02 | 34.08 ± 5.51 | 0.971 NS |

T- Test , significance level = 0.05.

Table 3. Comparison of diabetics (DM) and Non-Diabetics (NDM) against mode, median and mean (SD) for each section.

| Section | Maximum possible score | Mode score | | Median score | | Mean score (SD) | |
|---------------------------------|------------------------|------------|-----|--------------|-----|-----------------|---------------|
| | | DM | NDM | DM | NDM | DM | NDM |
| Knowledge | | | | | | | |
| Causes and risk factors of Ed | 13 | 9 | 7 | 8 | 7 | 7.60 (2.66) | 6.91 (3.68) |
| Prevention of ED | 6 | 4 | 4 | 4.5 | 4 | 4.52 (1.11) | 3.32(1.63) |
| Total knowledge | 19 | 13 | 12 | 12 | 11 | 12.12 (3.21) | 10.23 (4.73) |
| Perception | | | | | | | |
| Sexual activity | 22 | 14 | 16 | 14 | 15 | 14.33 (2.46) | 15.38 (2.61) |
| Effect of ED on quality of life | 32 | 19 | 21 | 20 | 19 | 20 (2.83) | 19.09 (3.36) |
| Total perception | 54 | 32 | 36 | 33 | 35 | 33.92 (4.02) | 34.08 (5.51) |
| Total score | 73 | 45 | 48 | 45 | 46 | 46.04 (7.23) | 44.31 (10.24) |

perception towards effect of ED on quality of life is 19.22 ± 3.22 (that is, 60.1%) with maximum possible score of 32. The mean score of total knowledge is 10.72 ± 4.46 (that is, 56.42%) with maximum possible score of 19. The mean score of total perception is 34.04 ± 5.15 (that is, 63%) with maximum possible score of 54. Mean (SD) score for perception towards sexual activity is significantly ($p < 0.001$) increased with the increase in the reproductive organ sizes in Table 1.

Mean score of total knowledge of non-diabetics was 10.23 ± 4.73 (that is, 53.8%) with ($p = 0.002$) maximum possible score of 19. Mean score of total perception of non-diabetics was 34.08 ± 5.51 (that is, 63.1%) with

maximum possible score of 54. Mean score of total Knowledge of diabetics was 12.11 ± 3.20 (that is, 63.7%) with maximum score of 19. Mean score of total perception of diabetics was 33.92 ± 4.02 (that is, 62.8%) with maximum possible score of 54 in Table 2. Sexual activity perception score is significantly ($p = 0.021$) lower with a mean score difference among diabetics and non-diabetics. A total of 70.51% participants responded to 'yes' on the use of medicine for ED. With 68.97% stating the use of Viagra® (Sildenafil) followed by Cialis® (Tadalafil) with 12.07% etc., presented in Figure 1a. Figure 1b has the Percentage comparison between diabetics and non diabetics according to using medicine for ED is

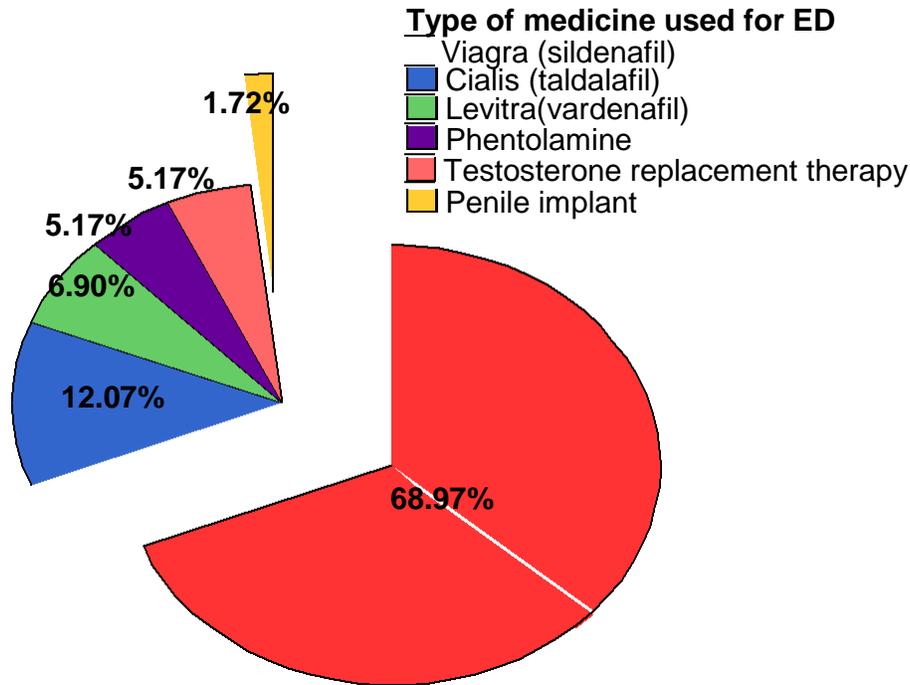


Figure 1a. The distribution of drug use pattern in ED.

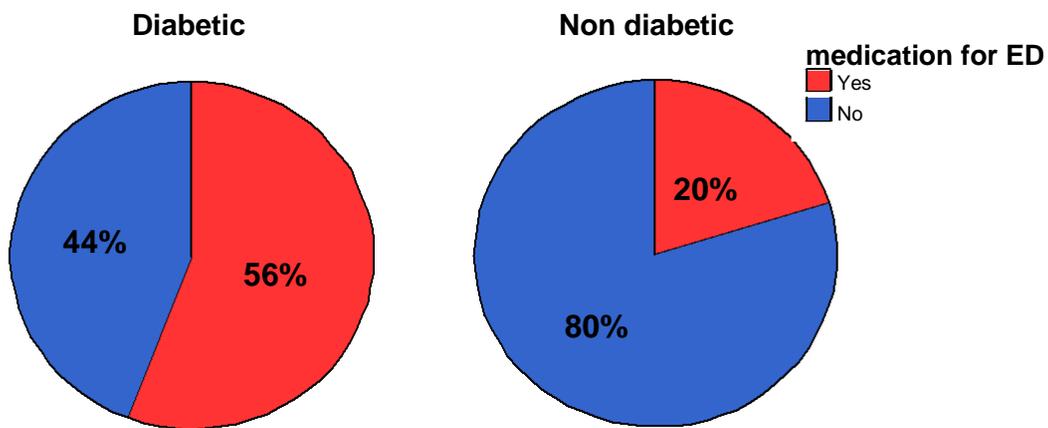


Figure 1b. Percentage comparison between diabetics and non diabetics according to using medicine for ED (chi-square $p < 0.001$).

44% and 56% against 80 and 20% respectively). Table 3 provides complete information regarding, the mode, median and mean score comparison against diabetic and non-diabetic patients on each section of knowledge and perceived activity. When we look at the descriptive data on the percentage of correctness regarding the knowledge question, a cumulative difference is observed between both groups, a univariate and multivariate analysis has been performed to identify the specific relationship of characteristics among diabetics and non-diabetics population (Table 4). Erection level is categorized by 5-Likert scale presented in questionnaire.

ANOVA analysis technique was used to identify the mean score differences with outcome domains of knowledge and perception score between diabetics and non-diabetics population (Tables 5 and 6). We come to know that diabetic patients are prone to low (13%) erection as compared to non-diabetics (3%), also 33% of non-diabetic claimed high erection level as compared to diabetics (17%). On other hand, the comparison between groups regarding the treatment preferences was analyzed ($p < 0.001$) and the information is presented in Figure 2. Upon further analysis on diabetics group, it is identified that erection level have a significant ($p < 0.001$)

Table 4. Percentage comparison of correctness of knowledge regarding risk factors and causes of ED among diabetics and non diabetics population.

| Question | Univariate | | | | Multivariate ^a | | |
|---|-----------------|------|--------------------------|------|---------------------------|-----|--------------|
| | Correctness (%) | | Wrong or do not know (%) | | P value | OR | 95% CI range |
| | DM | NDM | DM | NDM | | | |
| Erectile dysfunction (ED) is only a disease of elderly | 63.5 | 51.7 | 36.5 | 48.3 | <0.001 | 1.8 | 1.0 - 2.3 |
| ED is caused by physiological and psychological problems | 48.1 | 53.4 | 51.9 | 46.6 | < 0.0001 | 2.1 | 1.9 - 2.8 |
| Diabetics Mellitus is an important cause for ED | 59.6 | 57.4 | 40.4 | 42.6 | 0.16 | 1.0 | 0.6 - 1.6 |
| Hypercholesterolemia leads to ED | 55.8 | 39.2 | 44.2 | 60.8 | <0.0001 | 4.5 | 3.4 - 7.4 |
| Surgery in pelvic area ,specially for prostate will cause ED | 36.5 | 32.4 | 63.5 | 67.6 | 0.25 | 0.8 | 0.4 -1.5 |
| Radiation therapy in pelvic area may cause ED | 40.4 | 44.9 | 59.6 | 55.1 | 0.11 | 1.2 | 0.5 - 2.7 |
| Depression or stress may lead to ED | 53.8 | 57.8 | 46.2 | 42.2 | 0.14 | 1.1 | 0.7 - 1.8 |
| Sleep deprivation reduce sexual interest | 71.2 | 56.8 | 28.8 | 43.2 | <0.001 | 2.1 | 1.1 - 3.0 |
| The wife has a very important role in dissolving ED and maintains successful sex relations with husband | 88.5 | 78.4 | 11.5 | 21.6 | 0.051 | 1.7 | 0.9 - 2.8 |
| Family history is very important in ED | 57.7 | 52.7 | 42.3 | 47.3 | 0.47 | 1.0 | 0.6 - 1.6 |
| Smoking and Alcohol are main causes for ED | 75 | 58.8 | 25 | 41.2 | <0.001 | 2.2 | 1.0 - 3.1 |
| Lower urinary tract infections lead to ED | 57.7 | 52.7 | 42.3 | 47.3 | 0.16 | 1.0 | 0.7 - 1.8 |
| ED may result as a side effect from using some drugs like anti hypertensive, anti depressants, anti psychotics and anti ulcer drugs | 51.9 | 56.1 | 48.1 | 43.9 | 0.16 | 1.0 | 0.6 - 1.6 |

a: All the variables were mutually adjusted for each other.

association with years of diabetic history as shown in Figure 3. Finally, when we asked about the perception of the recent sexual life, 36% of non-diabetics with significance of $p<0.024$ stated 'Pleased' as compared to only 13% of diabetics (Figure 4).

DISCUSSION

Diabetic patients are significantly more knowledgeable regarding risk factors and preventive measures than non diabetic people. The higher mean total score of knowledge performed by diabetics, 12.11(3.20), compared

with non diabetic people, 10.23(4.73) ($p=0.002$), can be attributed to the regular lessons provided in diabetic clinic in USM main campus, and their interest to know more about the complications for their disease. It is rationale that people suffering from any disease will know more about their problems than others. It is not strange that people with more than 10 years with diabetics performed the highest knowledge scores compared to other diabetics with less diabetics' disease duration.

It is not unusual for diabetics to have significantly lower perception towards sexual activity ($P=0.012$) and higher perception regarding the effect of ED on quality of life ($p=0.332$). These results are consistent with many other studies

which showed that, Impotent men with diabetics presented with worse ED than non diabetics men with ED and this resulted in worse disease-specific health related quality of life in the diabetic men (Diabetics care, 2005; Joo, 2005). Also, erectile dysfunction is extremely common among type II diabetic patients and associated with poorer quality of life (Diabetics care, 2002; Carson, 2002). Also, there is significant difference between diabetics themselves and perception of sexual activity ($p= 0.019$), as those with longer duration with diabetics scored the lower sores of perception of sexual activity and the higher scores of effect of ED on their quality of life. There was significant association between diabetics and

Table 5. Mean scores of total knowledge and total perception for non-diabetics patients.

| Parameter | | Total knowledge (Mean±SD) | P value | Total perception (Mean±SD) | P value |
|-------------------|---------------------|------------------------------|---------|-------------------------------|---------|
| Age | 20-29 | 10.2250±3.59 | 0.661 | 34.700±6.68 | 0.124 |
| | 30-39 | 10.2432±3.56 | | 32.86±5.00 | |
| | 40-49 | 10.9744±4.85 | | 35.48±3.77 | |
| | 50-59 | 9.2000±5.74 | | 33.266±5.53 | |
| | >=60 | 11.0000±1.41 | | 29.00±12.72 | |
| Race | Malay | 10.07±4.76 | 0.584 | 34.20±5.23 | 0.638 |
| | Chinese | 12.33±3.57 | | 32.88±6.27 | |
| | Indian | 10.10±5.62 | | 32.900±8.34 | |
| | Others | 11.00±2.82 | | 37.50±3.53 | |
| Smoking | Smoker | 8.19±5.58 | 0.002 | 34.69±5.11 | 0.547 |
| | Non smoker | 11.01±4.17 | | 33.98±5.43 | |
| | Ex-smoker | 11.60±3.39 | | 33.17±6.54 | |
| Marital status | Single | 9.82±3.42 | 0.264 | 33.51±7.35 | 0.351 |
| | Married | 10.38±4.98 | | 34.27±4.96 | |
| | Divorced | 3.00 | | 27.00 | |
| Educational level | Primary education | 9.16±5.99 | 0.069 | 30.91±4.64 | 0.020 |
| | High school | 9.45±5.20 | | 33.64±6.01 | |
| | College/ University | 10.97±3.80 | | 34.53±4.94 | |
| | Postgraduate | 12.37±2.87 | | 37.12±3.61 | |
| Income | Non | 6.33±2.88 | 0.002 | 25.00±11.35 | 0.008 |
| | <RM1000 | 9.02±5.33 | | 33.08±6.37 | |
| | RM1000-1999 | 9.60±4.83 | | 34.23±4.68 | |
| | RM2000-2999 | 12.37±3.22 | | 35.31±4.32 | |
| | >RM3000 | 12.84±1.99 | | 36.30±3.66 | |

ANOVA, $\alpha = 0.05$

source of sexual information ($p < 0.001$) as most of diabetic patient (75%) ask for information or queries directly to the 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 ways for less educated, non-English speaking and low income populations. For example, health professionals might supply the materials with other aids such as, personal instructional sessions or audio-visual aids.

There is a significant difference between diabetics and non-diabetics people regarding the degree of erection and number of intercourse per month ($p = 0.000$, $p = 0.005$ respectively), as diabetics showed lower degree of erection and less number of intercourse per month and these results agree with another study conducted by David et al. (2003) showing that impotent men with diabetics present with worse ED than non-diabetics men with ED. Also, there is significant difference between

diabetics and different periods with diabetics and their confidence to keep erection ($p = 0.018$) with reduction in erection level in longer periods with diabetics. These results are compatible with the results of another study done by Constance et al. (2002) which showed, increasing duration with diabetics was positively associated with increased risk of ED. It was not unexpected to find significant difference towards satisfaction with recent sexual life between diabetics and non-diabetics with less satisfaction with diabetic people ($p < 0.001$).

It is interesting to find that 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 the ways they should follow in dealing with their husbands particularly for those wives whose husbands suffered from any degree of ED. There is one qualitative study conducted by Low et al. (2002) which showed that Malay and Chinese men tended to

Table 6. Mean scores of total knowledge and total perception of diabetics.

| Parameter | | Total knowledge (Mean ± SD) | P value | Total perception (Mean ± SD) | P value |
|--------------------------------|---------------------|--------------------------------|---------|---------------------------------|---------|
| Age | 20-29 | Non | | Non | |
| | 30-39 | 12.66±3.25 | 0.637 | 35.25±5.44 | 0.250 |
| | 40-49 | 11.58±3.51 | | 34.4±3.98 | |
| | 50-59 | 12.55±3.05 | | 33.22±2.90 | |
| | >=60 | 11.00±2.91 | | 31.40±2.88 | |
| | | | | | |
| Race | Malay | 12.09±3.13 | 0.753 | 33.60±3.74 | 0.165 |
| | Chinese | 12.00±0.00 | | 31.00±5.65 | |
| | Indian | 12.83±4.44 | | 36.33±4.92 | |
| | Others | 9.00 | | 39.00 | |
| Smoking | Smoker | 11.400±3.66 | 0.599 | 33.73±4.30 | 0.328 |
| | Non smoker | 12.37±3.21 | | 34.51±3.97 | |
| | Ex-smoker | 12.50±2.32 | | 32.12±3.48 | |
| Marital status | Single | 9.00 | 0.587 | 28.00 | 0.204 |
| | Married | 12.20±3.23 | | 33.9±3.96 | |
| | Divorced | 11.00 | | 38.00± | |
| Educational level | Primary education | 32.71±2.98 | 0.634 | 32.71±2.98 | 0.202 |
| | High school | 33.11±3.84 | | 33.11±3.84 | |
| | College/ University | 35.28±3.96 | | 35.28±3.96 | |
| | Postgraduate | 36.00±5.52 | | 36.00±5.52 | |
| Income | Non | 12.36±3.66 | 0.415 | 34.90±4.6 | 0.128 |
| | <RM1000 | 11.31±2.966 | | 33.09±3.5 | |
| | RM1000-1999 | 13.00±3.21 | | 33.88±3.89 | |
| | RM2000-2999 | 11.00 | | 42.00 | |
| | >RM3000 | - | | - | |
| Number of years with diabetics | <2 | 11.91±3.94 | 0.210 | 35.21±4.84 | 0.17 |
| | 3-5 | 11.33±2.44 | | 33.33±3.46 | |
| | 6-10 | 13.42±1.13 | | 31.85±1.34 | |
| | >10 | 14.50±3.00 | | 32.75±2.06 | |

ANOVA, $\alpha = 0.05$

problem might lead to extra-marital affairs, unlike the Indian men who attributed their condition to fate.

The majority of respondents from diabetics or non diabetics have awareness regarding the danger of smoking and alcohol as risk factors for ED, also, they awareness regarding using traditional herbs for treating ED, as these herbs are quite common in this country. In the same qualitative study by Low et al. (2002) Malays would prefer traditional medicine for the problem. Also, the respondents from diabetics and non diabetics are informed regarding the effect of ED and the possibility of causing other medical problems. The majority of respondents correctly answered the role of exercise and weight reduction in preventing ED, however, it is strange that the majority of both diabetics and non diabetics believe that ED is contagious and analgesics, and wide spectrum antibiotics may prevent ED.

There is no significant difference ($p=0.96$) between diabetics and non diabetics in asking doctors regarding ED but diabetics appeared to be more embarrassed with asking their doctors regarding their problem. This indicates the important role of doctors to ask their patients, particularly diabetics regarding their sexual activity. The increased understanding of the pathogenesis, proper evaluation and accurate diagnosis, and the available treatment options of erectile dysfunction, should stimulate health care planners to find ways of improving public awareness and physicians' up-to-date knowledge about this major medical problem.

Comparison between diabetics and non diabetics according to treatment of ED

We are not amazed to find significant association

- I will not ask for treatment
- By using medicine
- By using traditional medicine & herbs
- By using massage
- Others

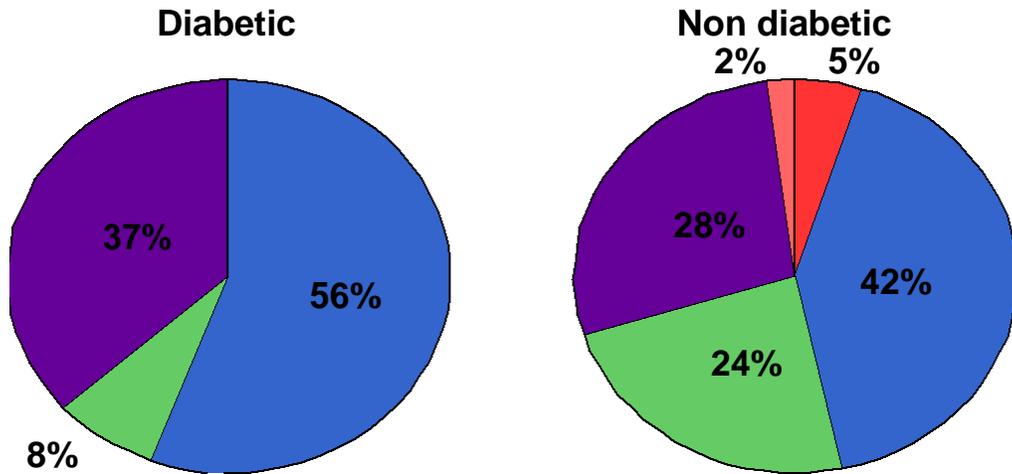


Figure 2. Comparison between diabetics and non diabetics according to treatment preferred.

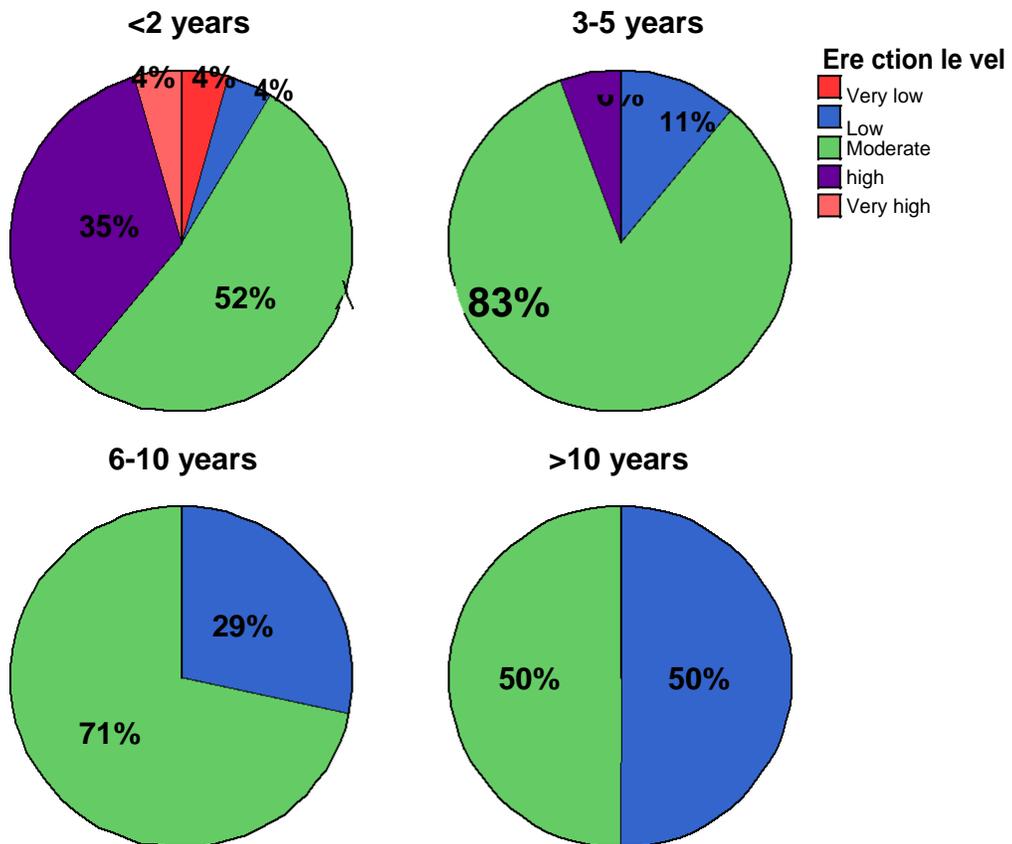


Figure 3. Comparison of diabetics with different periods according to erection level.

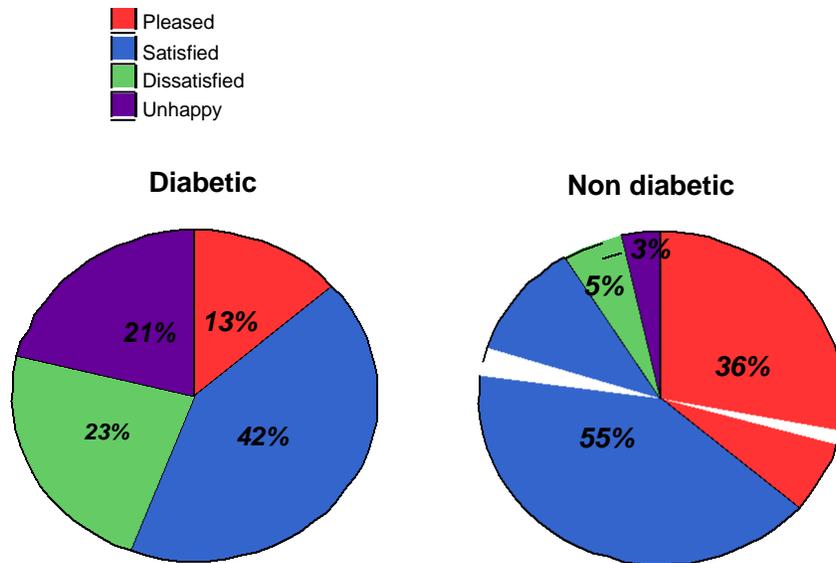


Figure 4. Comparison between diabetics and non diabetics according to satisfaction of recent sexual life.

Table 7. Comparison between diabetics and non diabetics according to perception towards ED.

| Question | Test | P value |
|--|--------------|---------|
| The best source of knowledge for sexual information. | Chi-square | 0.000 |
| How would you rate your confidence that you could get, and keep an erection? | Mann-Whitney | 0.000 |
| Generally speaking, in a month, how often do you usually have sexual intercourse or activity (on average?) | Mann-Whitney | 0.005 |
| If you were to spend the rest of your life with your sex life just the way it is now, how would you feel about that? | Mann-Whitney | 0.000 |
| Unsatisfactory sex life may affect your job and mental performance | Mann-Whitney | 0.071 |
| How comfortable you feel asking your doctor about ED? | Mann-Whitney | 0.405 |

between diabetics or non diabetics in using medicine for treatment of ED ($p < 0.001$), as 56% of diabetics in our sample use medicine for ED, while only 20% of non diabetics used medicine. Also, there is significant association between diabetics and the method of treatment preferred ($p = 0.009$), but there is no significant association between diabetics or non diabetics regarding using any particular medicine for ED or the appearance of drug adverse effect (Table 7).

The majority of both diabetics (56%) and non diabetics (42%) preferred medicine as the first choice for treatment of ED, followed by massage (37% for diabetics and 28% for non diabetics), then by traditional herbs (8% for diabetics and 24% for non diabetics).

Our results finds that Viagra® (Sildenafil) is the most widely used among diabetics and non-diabetics as 93% of ED diabetic patients use Viagra and 83% of ED non-diabetics people. This may be attributed to safety of PDE5 inhibitor and the minimal invasive side effect for the drug. The most common side effects among both groups were gastro intestinal irritation, headache and flushing.

Limitations of the study

To distinguish between different types of diabetics is not performed, as a limitation in many other studies; most of the results dealing with type 2 diabetics.

The co-morbidities (other than diabetics' mellitus) that may cause ED and worsening in the quality of life are not undermining in this study.

CONCLUSION

Although diabetic patients are more knowledgeable regarding ED, they have 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.

Qualification is critically an important factor for perception towards ED to the general public, while the level of income strongly affects the knowledge towards ED and the perception of sexual activity. Health care professionals should be more active in promoting health

information about ED, and the information should be easily and cheaply accessed by all. Oral therapy by PDE 5 inhibitors particularly Sildenafil (Viagra[®]) is the most widely used treatment for ED with minimal invasive side effects in both diabetics and non diabetic people.

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APPENDIX 1

A sample of the questionnaires distributed.

QUESTIONNAIRE FOR EVALUATING ERECTILE DYSFUNCTION (ED) ***ALL ANSWERS WILL BE STRICTLY CONFIDENTIAL***

A. Demographic data:

1. Age: ----- years Weight ----- Kg Height ----- cm
 2. Race :MalayChineseIndianOthers
 3. SmokerNon smokerEx-smoker
 4. Marital status:Single MarriedDivorcedWidowed
 5. Educational level:Non Primary educationHigh schoolCollege/ UniversityPost graduate
 6. Income:No income<RM1000RM 1000-1999RM 2000-2999> RM 3000
 7. Profession:StudentStaff member Others, specify -----
 8. Are you diabetic?Yes No
- If yes, How many years before?<2 years 3-5 years6-10 years>10 years

B. Questions on practice (perception) regarding sexual activity

1. The best source of knowledge for sexual information is:
Pharmacist and medical staff Radio and TV Newspapers and magazines Friends Family Others
2. How do you rate your reproductive organ size?
SmallAverageLarge
3. How do you rate your desire for intercourse?
Poor Fair Strong Very strong
4. How would you rate your confidence that you could get and keep an erection?
Very highHighModerateLowVery low
5. Generally speaking, in a month, how often do you usually have sexual intercourse or activity (on average?)
Non or very rare1-3 times4 – 6 times> 6 times
6. When you had sexual stimulation or intercourse, how often did you have the feeling of orgasm?
NeverFew timesSometimesMost timesAlways
7. Do you experience any pain or discomfort during erection or ejaculation?

No Slight pain Moderate pain Strong pain

C. Questions on treatment of ED: (You may tick more than one box)

1. If you have ED, How do you intend to treat?

I will not treat By using medicine By using traditional medicine and herbs By using massage Others, specify -----

2. Have you ever use medication for ED before?

YesNo

(If No, quit question 3)

3. If you are going to treat ED, which of the following you will use?

Viagra (sildenafil) Cialis (tadalafil) Levitra (vardenafil) Yohimbine Phentolamine Apomorphine Testosterone replacement therapy Penile implants Others, specify -----

4. Which of the following is a common side effect for your drug used for ED?

No side effect Headache Flushing Nausea and vomiting GIT irritation Others, specify -----

D. Perception of effect of ED on quality of life

1. If it is difficult to get erection, how bothersome is this for you?

Not at all A little bit Moderately Very much

2. Sexual health is important and an unsatisfactory sex life can cause other family problems and the breakup of marriages.

Strongly disagree Disagree Neutral Agree Strongly agree

3. Unsatisfactory sex life may affect your job and mental performance.

Strongly disagree Disagree Neutral Agree Strongly agree

4. Referral to the urologist is very important to discuss and explore this problem in more details.

Strongly disagree Disagree Neutral Agree Strongly agree

5. If you were to spend the rest of your life with your sex life just the way it is now how would you feel about that?

Pleased Satisfied Dissatisfied Unhappy Terrible

6. If you have pain or discomfort during erection or ejaculation, how bothersome is this for you?

Not at all A little bit Moderately Very much

7. How comfortable you feel asking your doctor about ED?

Not comfortable Normal Slightly comfortable Very comfortable

E. Questions on knowledge of causes and risk factors for ED

| No | Question | Yes | No | Do not know |
|----|--|-----|----|-------------|
| 1 | Erectile Dysfunction (ED) is only a disease of elderly | | | |
| 2 | Erectile Dysfunction (ED) is caused by physiological and psychological problems | | | |
| 3 | Diabetes Mellitus is an important cause for ED. | | | |
| 4 | Hypercholesterolemia leads to ED. | | | |
| 5 | Surgery in pelvic area ,specially for prostate will cause ED. | | | |
| 6 | Radiation therapy in pelvic area may cause ED. | | | |
| 7 | Depression or stress may lead to ED. | | | |
| 8 | Sleep deprivation reduce sexual interest. | | | |
| 9 | relations with husband. | | | |
| 10 | Family history is very important in ED. | | | |
| 11 | Smoking and Alcohol are main causes for ED. | | | |
| 12 | Lower urinary tract infections lead to ED. | | | |
| 13 | ED may result as a side effect from using some drugs like Anti hypertensive, anti depressants, anti psychotics and anti ulcer drugs. | | | |

F. Questions on knowledge of preventing ED.

| No | Question | Yes | No | Do not know |
|----|---|-----|----|-------------|
| 1 | Highly nutritious diets and vitamins will prevent ED. | | | |
| 2 | Broad spectrum antibiotics and analgesics can prevent ED. | | | |
| 3 | Exercise and weight reduction help in prevent or reduce ED. | | | |
| 4 | Herbal medicine helps in treating ED. | | | |
| 5 | ED could lead to other medical problems. | | | |
| 6 | ED is contagious and Patient with ED should not donate blood. | | | |