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Psychological morbidities among spouses of men with type 2 diabetes mellitus and erectile dysfunction in a primary care setting

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Abstract

Introduction: Erectile dysfunction (ED) negatively affects patients' emotions. However, its effect on spouses' psychological well-being remains largely unknown. This study aimed to examine psychological morbidities and their associated factors among spouses of men with type 2 diabetes mellitus (T2DM) and ED.

Methods: This cross-sectional study included 115 women recruited through their husbands who were patients at a selected government health clinic in Malaysia. A self-administered questionnaire containing the Depression Anxiety and Stress Scale-21 and items on health-related information, marital history, sexual history and perception of husband's ED was used to assess possible depression, anxiety and stress.

Results: The prevalence of psychological morbidities was 28.7% (depression=17.4%, anxiety=25.2% and stress=10.4%). Most respondents were middle-aged [median (interquartile range)=44.0 (11.0) years], were employed (55.7%) and had a low income (81.7%). About 47.0% of the spouses had a medical problem. The mean marriage duration was 18.7 (standard deviation=7.9) years. Almost all (90.4%) had sexual intercourse (SI) within the previous month. The majority had moderate-to-high interest in SI (72.2%) with a frequency of one to two times per week (69.6%). The majority (75.7%) did not perceive their husband as having ED. Multiple logistic regression demonstrated that medical illness was significantly associated with anxiety (adjusted odds ratio=2.85, 95% confidence interval=1.11–7.29, P=0.029).

Conclusion: Psychological morbidities were present among the spouses of men with T2DM and ED. Psychological well-being was significantly affected by their medical illness. Despite their husband's ED, the women declared to have regular sexual relationships and did not perceive their husband as having erectile problems.

Introduction

An intimate relationship is vital for a couple's overall happiness, well-being and relationship satisfaction. Any sexual dysfunction among men could negatively affect their sexual relationships and overall well-being.[1] The percentage of men affected by erectile dysfunction (ED) varies from 2.3% to 76.5%, with the prevalence of diabetes mellitus-related ED ranging from 32% to 90%, depending on the studied population and the diagnostic instrument used.[2,3] Malaysia is one of the countries with a high prevalence of ED (82%–89.3%),[4,5] with one of the commonest causes being diabetes mellitus.[4,6]

ED is associated with psychological morbidities among patients, especially depression, which yields a bidirectional relationship.[7–9] One of the possible reasons is that patients with ED could feel less masculine and less desirable as well as feel guilty for 'letting down' their partners.[8,10,11] They may also tend to react negatively towards their partners, such as rejecting, avoiding and neglecting them; blaming them for their inability to perform sexual intercourse (SI) and even being aggressive towards them.[12,13]

A couple's marital relationship and intimacy could be affected by ED, leading to marital breakdown.[11–13] ED not only inflicts psychological trauma on men but also impairs their partner's sexual gratification, sexual health (e.g. arousal difficulty, orgasmic disorder or decreased libido) and psychological well-being.[11,13–17] Although there is an alarming increase in the prevalence of ED among men with type 2 diabetes mellitus (T2DM), a

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limited number of studies have given attention to spouses' psychological well-being. The effect of ED on spouses' emotional health is still understudied, especially among Asian populations.

A study conducted in North-West India showed significant marital dysfunction, sexual dissatisfaction, more psychological symptoms and lower quality of life among spouses of men with non-organic ED.[18] As sexual problems are considered a private and taboo subject in Malaysia, they remain poorly understood. Given these gaps in research and knowledge, this study aimed to estimate the prevalence of psychological morbidities (depression, anxiety and stress) among spouses of patients with T2DM and ED who were attendees of a selected government health clinic in Malaysia. In addition, this study also examined the association of these psychological morbidities with the respondents' sociodemographic data, health-related information and marital and sexual factors as well as their awareness of their husband's ED. These factors were examined owing to their previous association with sexual relationships.[19]

Methods

Study setting and design and participant recruitment

This cross-sectional study was conducted in a selected government health clinic in Malaysia. The study population was spouses of men with T2DM and ED. Those who were illiterate, diagnosed with psychiatric illness or mental impairment and menopausal were excluded from this study. Notably, the selected government health clinic had made a standard practice to screen all men with T2DM for ED.

In the current study, men with T2DM who attended the outpatient diabetic clinic during the study period were approached and screened for ED using the International Index of Erectile Function-5. Verbal permission was obtained to invite their wives to participate in this study. The husbands were informed that the survey aimed to gauge the well-being of spouses of patients with T2DM. They were reassured that their diagnosis of ED would not be disclosed to their wives. Wives who accompanied their husbands during the clinic visit were recruited onsite, while others were contacted via telephone calls.

Upon explaining the study process and objectives to the women, we obtained their written consent. All information was kept and handled confidentially according to the applicable regulations. Respondents who were identified to have possible psychological problems were referred to a medical officer for further assessment and treatment.

Prior to the actual study, a feasibility study was conducted among 35 spouses of men with T2DM and ED. The majority of these participants felt positive about the consent procedures and sufficiently understood the questionnaire. The observed prevalence of possible depression, anxiety and stress in this pilot study among the spouses of men with T2DM and ED was 23%, 31% and 31%, respectively. The sample size for the actual study was estimated from these results. Thus, the final sample size needed was 154 participants, with a precision of 0.08, a confidence interval (CI) of 95% and a dropout rate of 20%.

The study used a self-administered questionnaire to assess the respondents' sociodemographic details (i.e. age, ethnicity, educational level, employment status and monthly family income), psychological problems (i.e. depression, anxiety and stress), health-related information, marital history, sexual history (i.e. SI within the past month, frequency of SI and perceived interest in SI) and perception of husband's ED.

The main researcher was at the study site to assist respondents who had difficulties in or queries when answering the questionnaire. For the assessment of psychological problems, the Malay version of the Depression Anxiety and Stress Scale (DASS)-21 was used to assess the presence of possible depression, anxiety and stress through the manifestation of symptoms over a week. The scale has been locally validated to Malay language and shown to have good psychometric properties for assessing psychological morbidities.[20] It has seven items per domain, and its responses are scored on four-point severity and frequency scales to rate the symptoms. The scores are summed up and multiplied by 2 to obtain the total score for each domain. The cut-off level for indicating possible depression, anxiety and stress is more than 9, 7 and 14, respectively. Even though the DASS-18 is potentially more suitable for Asian populations, it is yet to be validated in our local setting.

The data were analysed using IBM SPSS version 23 (IBM Corp., Armonk, NY, USA).

Descriptive statistics including frequencies, means and medians were used to describe the data. The monthly family income was categorised into two groups: low income (<RM 3000) and high income (≥RM 3000) based on the Malaysia Household Income and Expenditure Survey 2014. Simple logistic regression (SLR) and multiple logistic regression (MLR) were applied to determine the significant associated factors of possible depression, anxiety and stress after controlling for other confounding factors. Variables with a P-value of <0.25 in the SLR were analysed in the MLR using the 'enter' method. The statistical significance level was set at P<0.05.

Results

Demographic characteristics

The median [interquartile range (IQR)] age of the respondents was 44.0 (11.0) years (range=27–54 years). Almost half of the respondents were Malays (49.6%, 57/115). Close to two-thirds (64.3%, 74/115) had attained secondary education, and more than half (55.7%, 64/115) were employed. The majority (81.7%, 94/115) had a low income. (**Table 1**)

Health-related information and marital and sexual factors

Almost half of the respondents (47.0%, 54/115) had underlying chronic medical illnesses, with T2DM (31.5%) and hypertension (57.4%) being the most common comorbidities. The majority (75.7%, 87/115) admitted leading inactive lifestyles, on average doing two or fewer sessions of physical activity per week. The median (IQR) age at marriage was 25.0 (5.0) years, and the mean duration of marriage was 18.7 [standard deviation (SD)=7.9] years. The median (IQR) age difference between the respondents and their husbands was 4.0 (4.0) years. (**Table 1**)

Almost all respondents (90.4%, 104/115) had SI within the previous month. About 70.0% had one to two SIs per week, while 20.9% had three or more SIs per week. The majority (72.2%, 83/115) of the women admitted to having moderate-to-high interest in SI. About three-quarters (75.7%, 87/115) perceived that their husband did not have ED (**Table 1**).

Table 1. Sociodemographic data, health-related information and marital history of the spouses of patients with T2DM and ED (N=115).

Variables	Results
Age, year [median (IQR)]	44.0 (11.0)
Ethnicity [n (%)]	
Malay	57 (49.6)
Chinese	14 (12.2)
Indian	40 (34.8)
Others	4 (3.5)
Educational level [n (%)]	
Primary	16 (13.9)
Secondary	74 (64.3)
Tertiary	25 (21.7)
Employment status [n (%)]	
Employed	64 (55.7)
Unemployed	51 (44.3)
Family income [n (%)]	
Low income	94 (81.7)
Middle income	21 (18.3)
Presence of chronic medical illness [n (%)]	
No	61 (53.0)
Yes	54 (47.0)
Frequency of physical activities [n (%)]	
≤2 times/week	87 (75.7)
≥3 times/week	28 (24.3)
Age at marriage, year [median (IQR)]	25.0 (5.0)
Age difference between spouses, year [median (IQR)]	4.0 (4.0)

Table 1. Continued	
Variables	**Results**
Duration of marriage, year [mean (SD)]	18.7 (7.9)
No. of children [median (IQR)]	3.0 (2.0)
Sexual intercourse within the previous month [n (%)]	
No	11 (9.6)
Yes	104 (90.4)
Frequency of sexual intercourse in a week [n (%)]	
0 times	11 (9.6)
1–2 times	80 (69.6)
≥3 times	24 (20.9)
Perceived interest in sexual intercourse [n (%)]	
No or low interest	32 (27.8)
Moderate or high interest	83 (72.2)
Perceived ED of husband [n (%)]	
No	87 (75.7)
Yes	28 (24.3)

T2DM, type 2 diabetes mellitus; ED, erectile dysfunction; IQR, interquartile range; SD, standard deviation

Prevalence of possible depression, anxiety and stress

Approximately 28.7% (33/115) of the respondents were found to have at least one psychological morbidity, whereas 7.8% (9/115) had all three morbidities. The prevalence of possible depression, anxiety and stress was 17.4% (20/115), 25.2% (29/115) and 10.4% (12/115), respectively.

Associated factors of possible depression, anxiety and stress

The SLR showed that the respondents' age (P=0.04), SI within the previous month (P=0.002) and frequency of SI in a week (1–2 times: P<0.003; ≥3 times: P=0.01) were significantly associated with possible depression (**Table 2**).

Table 2. Simple and multiple logistic regressions of the association between possible depression and sociodemographic data, health-related information and marital factors (N=115).

	Possible depression[a] (n=20)			
Variables	**Crude OR (95% CI)**	**P-value**	**Adjusted OR (95% CI)**	**P-value**
Age, year [median (IQR)]	1.09 (1.01, 1.18)	**0.04**	1.04 (0.91, 1.19)	0.563
Ethnicity	0.77 (0.29, 2.02)	0.59	-	-
Educational level [n (%)]	0.59 (0.16, 2.19)	0.42	-	-
Employment status [n (%)]	1.03 (0.39, 2.72)	0.95	-	-
Family income [n (%)]	0.44 (0.10, 2.08)	0.30	-	-
Chronic medical illness [n (%)]	2.45 (0.90, 6.68)	0.08	1.50 (0.48, 4.72)	0.488
Age at marriage, year [median (IQR)]	0.98 (0.87, 1.08)	0.65	-	-
Age difference between spouses, year [median (IQR)]	0.96 (0.82, 1.12)	0.57	-	-
Duration of marriage, year [mean (SD)]	1.07 (1.00, 1.14)	0.05	1.02 (0.91, 1.14)	0.750
No. of children [median (IQR)]	1.13 (0.86, 1.49)	0.38	-	-
SI within the previous month [n (%)]	0.13 (0.04, 0.48)	**<0.05**	0.26 (0.04, 1.92)	0.186
Frequency of SI in a week [n (%)]			-	-
1–2 times	0.13 (0.04, 0.51)	**<0.05**	0.79 (0.19, 3.36)	0.749
≥3 times	0.12 (0.02, 0.65)	**0.01**	-	-
Perceived interest in SI [n (%)]	0.88 (0.31, 2.53)	0.81	-	-
Perceived ED of husband [n (%)]	2.50 (0.90, 6.94)	0.08	1.30 (0.36, 4.67)	0.686

SI, sexual intercourse; ED, erectile dysfunction; OR, odds ratio; CI, confidence interval; IQR, interquartile range; SD, standard deviation

Significance level: P<0.05

[a]Variables included in the multiple logistic regression conducted using the 'enter' method: age, chronic medical illness, duration of marriage, SI within the past month, frequency of SI in a week and perceived ED of husband.

None of the factors were significantly associated with possible depression when other confounding factors were controlled for (**Table 2**). These factors included the respondents' age, presence of chronic medical illness, duration of marriage, SI within the previous month, frequency of SI in a week and perceived ED of husband.

Only the presence of chronic medical illness was significantly associated with possible anxiety in both SLR [crude odds ratio (OR)=3.40, 95% CI=1.39–8.34, P=0.01] (**Table 3**) and MLR (adjusted OR=2.85, 95% CI=1.11–7.29, P=0.03) (**Table 3**). The variables entered in the MLR were the respondents' educational level, presence of chronic medical illness and frequency of SI in a week.

Table 3. Simple and multiple logistic regressions of the association between possible anxiety and sociodemographic data, health-related information and marital factors (N=115).

Possible anxiety[a] (n=29)				
Variables	**Crude OR (95% CI)**	**P-value**	**Adjusted OR (95% CI)**	**P-value**
Age, year [median (IQR)]	1.03 (0.97, 1.10)	0.39		
Ethnicity	1.07 (0.46, 2.49)	0.87		
Educational level [n (%)]	2.49 (0.97, 6.42)	**0.06**	1.98 (0.74, 5.34)	0.176
Employment status [n (%)]	0.85 (0.36, 2.00)	0.71		
Family income [n (%)]	0.91 (0.30, 2.76)	0.87		
Chronic medical illness [n (%)]	3.40 (1.39, 8.34)	**0.01**	2.85 (1.11, 7.29)	0.029
Physical activities [n (%)]	0.99 (0.37, 2.63)	0.98		
Age at marriage, year [median (IQR)]	0.99 (0.91, 1.08)	0.87		
Age difference between spouses, year [median (IQR)]	0.95 (0.84, 1.09)	0.49		
Duration of marriage, year [mean (SD)]	1.02 (0.97, 1.08)	0.49		
No. of children [median (IQR)]	1.04 (0.81, 1.32)	0.77		
SI within the previous month [n (%)]	0.55 (0.15, 2.05)	0.37		
Frequency of SI in a week [n (%)]	1			
1–2 times	0.62 (0.17, 2.35)	**0.48**	0.88 (0.22, 3.49)	0.855
≥3 times	0.35 (0.07, 1.79)	**0.21**	0.55 (0.10, 3.01)	0.488
Perceived interest in SI [n (%)]	1.66 (0.61, 4.56)	0.32		
Perceived ED of husband [n (%)]	1.26 (0.48, 3.27)	0.64		

SI, sexual intercourse; ED, erectile dysfunction; OR, odds ratio; CI, confidence interval; IQR, interquartile range; SD, standard deviation
Significance level: P<0.05
[a]Variables included in the multiple logistic regression conducted using the 'enter' method: educational level, chronic medical illness and frequency of SI in a week.

As for possible stress, the significant associated factors were the presence of chronic medical illness (P=0.02), duration of marriage (P=0.05), SI within the previous month (P=0.01) and frequency of SI in a week (1–2 times: P=0.02; ≥3 times: P=0.03) (Table 4). However, none of these factors were significant when other factors were controlled for in the MLR analysis (Table 4). These factors included the respondents' age, presence of medical illness, age at marriage, duration of marriage, SI within the previous month, frequency of SI in a week and perceived ED of husband.

Table 4. Simple and multiple logistic regressions of the associations between possible stress and sociodemographic data, health-related information and marital factors (N=115).

Possible stress[a] (n=12)				
Variables	**Crude OR (95% CI)**	**P-value**	**Adjusted OR (95% CI)**	**P-value**
Age, year [median (IQR)]	1.08 (0.98, 1.19)	0.13	1.09 (0.13, 9.44)	0.939
Ethnicity	0.67 (0.20, 2.26)	0.52		
Educational level [n (%)]	1.23 (0.31, 4.92)	0.77		
Employment status [n (%)]	1.29 (0.39, 4.27)	0.68		
Family income [n (%)]	0.88 (0.18, 4.37)	0.88		
Chronic medical illness [n (%)]	6.71 (1.40, 32.15)	**0.02**	5.74 (0.96, 34.34)	0.055
Age at marriage, year [median (IQR)]	0.91 (0.79, 1.05)	0.21	0.82 (0.09, 7.08)	0.853
Age difference between spouses, year [median (IQR)]	0.89 (0.72, 1.10)	0.27		

Table 4. Continued

Possible stress[a] (n=12)				
Variables	**Crude OR (95% CI)**	**P-value**	**Adjusted OR (95% CI)**	**P-value**
Duration of marriage, year [mean (SD)]	1.09 (1.00, 1.19)	**0.05**	0.92 (0.11, 8.02)	0.939
No. of children [median (IQR)]	1.21 (0.87, 1.68)	0.27		
SI within the previous month [n (%)]	0.15 (0.04, 0.61)	**0.01**	0.19 (0.01, 2.96)	0.237
Frequency of SI in a week [n (%)]				
1–2 times	0.17 (0.04, 0.72)	**0.02**	1.52 (0.16, 14.45)	0.714
≥3 times	0.08 (0.01, 0.80)	**0.03**	1.41 (0.29, 6.83)	0.673
Perceived interest in SI [n (%)]	2.06 (0.43, 9.94)	0.37		
Perceived ED of husband [n (%)]	2.48 (0.72, 8.57)	0.15		

SI, sexual intercourse; ED, erectile dysfunction; OR, odds ratio; CI, confidence interval; IQR, interquartile range; SD, standard deviation
Significance level: P<0.05
[a]Variables included in the multiple logistic regression conducted using the 'enter' method: age, chronic medical illness, age at marriage, duration of marriage, SI within the past month, frequency of SI in a week and perceived ED of husband.

Discussion

To the best of our knowledge, this study is the first to assess the impact of ED on the spouses of patients with diabetes mellitus seen in primary care settings in an Asian multiethnic society. Discussing problems in the bedroom with anyone outside the confines of marriage is a social taboo and is usually avoided as a conversational topic among many Asian cultures in the region. This study hopes to provide insights to help address the psychological impact of ED on the spouses of patients to assist in and provide management for the psychological stressors identified leveraged on the bio-psycho-social model.

This study showed that psychological morbidities were quite common among the spouses of men who had T2DM and ED. About 3 in 10 women had some psychological problem, especially anxiety and depression. The prevalence of anxiety was 25.2%, which is higher than 7.8% and 8.4% found in a few local studies conducted on general primary care attendees.[21,22] The current survey also showed a slightly higher prevalence of depression (17.4%) in contrast to 9.2% and 12.1% in the studies by Sidik et al. and Kader Maideen et al., respectively.[23,24] A study in the West reported that as high as 44% of spouses of men with ED had symptoms of depression.14 However, having depressive symptoms does not necessarily indicate the presence of a depressive disorder. Hence, direct comparisons and conclusions could not be made owing to the different tools used to assess psychological morbidities.

Evidence has shown that psychological morbidities are more prevalent among women who have male partners with ED than among the general population, which may be attributed to the women's perception.[12] They might think that it is their fault for not being able to satisfy their husband sexually, leading to anxiousness, guilt and feeling like a failure.[12] It is also possible that this might trigger a communication issue, and the loss of sexual intimacy might cause a 'state of limbo' with an emotional vacuum and reduced quality of life.[12]

The relatively high prevalence of psychological morbidities across studies could also be attributed to the different characteristics of study populations. For example, Sidik et al. included women with an average age of 30.[9] years (range 18 - 81 years) in their study.[23] About 40% of women were unmarried, and only a quarter had a medical illness. On the contrary, most respondents in the present study were aged between 27 and 54 years and were married for more than 15 years, with an average of three growing children. The majority of the respondents had a low income. Apart from having a husband with a chronic illness, almost half of the respondents also had medical condition(s) themselves. Given these characteristics, their life challenges were not similar. Different stages of life and roles (e.g. work, marriage and parenting roles) may cause various levels of work–family conflicts and subsequently impair their psychological well-being.[25] Furthermore, financial constraints, difficulties in the parent–child relationship, family issues, serious illness, housing problems and unhappiness at work were shown to be significant determinants of psychological morbidities among Malaysian women.[21,23]

Interestingly, unhappy relationships with husbands or partners were not significantly associated with depression or anxiety, unless women experienced domestic violence.[21,23]

In our study, none of the marital and sexual factors were significantly associated with depression, anxiety or stress. This finding indicates that the sexual relationship of the respondents did not significantly impair their psychological well-being even though they had a husband with ED. Their sexual relationship appeared satisfactory, as almost all respondents had SI within the previous month for at least 1–2 times in a week. This frequency of SI can be considered common among Malaysian women, as also shown by Sidi et al.[26] In their study, 44.3% of women who attended a primary health clinic had SI 1–2 times per week, while 13.5% had much more frequent SI.[26] As it is a marker of male sexual functioning,[26] the frequency of SI in this study may indicate that the ED experienced by the participants' husbands might be mild. This postulation is in line with our findings wherein three-quarters of the respondents did not realise that their husbands had ED. It seems likely their spouse's ED was mild enough, not compromising their sexual relationship and causing significant sexual dissatisfaction.[27] Even if the respondents experienced lesser sexual gratification than they did before their husbands developed ED,[17] they might adapt and adjust their sexual needs according to their husband's sexual functioning.[13,28] Furthermore, middle-aged Asian women are less likely to consider sex as an important aspect of their life than Western women.[29] Thus, having a husband with ED may not be considered a significant problem for them.

Even though this study did not show any significant association between the sexual factors and psychological morbidities among the spouses of men with ED, the possibility should not be dismissed. As their husband's ED might be mild and did not negatively affect their sexual functioning, further studies are needed to assess these psychological effects among spouses of men with various severities of ED. These findings might provide a clearer understanding of how Malaysian women are affected by their husband's inability to satisfy their sexual needs. Despite having findings that undermine the negative psychological impacts of ED on women, this study highlights the importance of education on ED among this population, as many perceived that their husbands did not have ED. This misperception could also be attributed to their dysfunctional sexual belief, which could be reduced through education on ED.[28] Should they know that ED is linked to their husband's T2DM and could potentially worsen without proper treatment, they would be more likely to positively influence their husband's help-seeking behaviour. In the study by Fisher et al., men were shown to be more likely to consult doctors about ED and utilise treatment for ED when their spouse perceived ED as permanent, severe and related to a problem other than psychological aspects.[17]

Another highlight in the current study is the link between chronic illness and anxiety, wherein the presence of chronic illness was found to be significantly associated with possible anxiety. In this study, the majority of the respondents had hypertension, while less than a third had T2DM. As most of our respondents were middle-aged, they may be just recently diagnosed with chronic illness. Having a chronic disease at this stage of life can be considered an additional stressor, on top of the ongoing stressors related to their roles in employment, marital relationship and parenting.[25] Since the early phase of the illness is an adjustment stage, their life challenges would increase as they try to cope with their illness.[30] They might worry about their future, and this cognitive response would lead to emotional distress such as anxiety.[30]

Limitations and recommendations

This study has several limitations. As it was a cross-sectional study, the causal effect of ED on female partners' psychological well-being could not be directly demonstrated. In the future, prospective studies are recommended to investigate the causal relationship between psychological morbidities and spouses' ED. Since this study was conducted in a primary care setting and used convenience sampling, generalisation of the reported findings is limited. Another limitation of the study is the use of the DASS-21 itself. The questionnaire is a self-reported and self-administered scale, which may yield recall bias. In addition, owing to the nature of the questions, the questionnaire served as a screening tool for detecting the possibility of psychological morbidities and requiring a clinical evaluation to confirm the diagnosis. Nevertheless, the participants with possible psychological morbidities were referred for further evaluation and confirmation of the diagnosis.

Future studies should also ensure the representation of various ED severities through stratified sampling, as spouses' psychological well-being can be affected differently according to ED severity. Another limitation of the current study is related to the use of a generic self-administered questionnaire. Given that sexual relationship is a sensitive subject in our culture, the responses may be subjected to social desirability bias, which can be reduced by using an anonymous questionnaire. However, the Hawthorne phenomena may still influence respondents' answers. The use of a disease-specific tool to assess the psychological impact of ED on partners is also recommended.

In conclusion, anxiety and depression were quite common among the wives of men with T2DM and ED. The sexual and marital factors did not directly affect the psychological well-being of the women. Although their husbands were diagnosed with ED, the wives reported a regular sexual relationship, and the majority did not perceive that their husbands had ED.

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Author contributions
NFK and ZH conceived and designed the study. NFK conducted the research and gathered and organised the data. HT analysed and interpreted the data. NFK and ZH drafted the initial manuscript. HT, NAM, SMH and RK wrote the manuscript. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Ethical approval
The study was approved by the Research and Ethical Committee, University Kebangsaan Malaysia (FF-2016-086) and Malaysia Research Ethical Committee, National Institute of Health, Ministry of Health Malaysia (NMRR-15-2196-28652). Permission from the family medicine specialist who headed the clinic was also sought.

Conflicts of interest
There are no conflicts of interest to declare.

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Data sharing statement
Raw data are available only upon request.

Disclaimer
This article's findings had been presented as part of the poster presentation on 'The psychological morbidities among spouses of men with type 2 diabetes mellitus (T2DM) and erectile dysfunction (ED)' at the 22nd Family Medicine Scientific Conference 2019. This article had been added as a supplement in the *Malaysian Medicine Journal*, volume 14, 2019.

How does this paper make a difference in general practice?

- This is the first local study to evaluate the effect of erectile dysfunction (ED) on the psychological well-being of spouses of patients with type 2 diabetes mellitus (T2DM) and ED.
- Primary care physicians must ask patients with T2DM and ED regarding their spouses' health and well-being to gauge the impact of the diagnoses on sexual practices.

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