Prevalence and risk factors of erectile dysfunction among patients attending primary health care centres in Qatar

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معدل انتشار وعوامل اختطار خلل الانتعاظ لدى مُرَاجِعِي مراكز الرعاية الصحية الأولية في قطر

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الخلاصة: يعتبر خلل الانتعاظ (الانتصاب) من المشكلات الصحية الشائعة التي تؤثر على نوعية حياة الرجال من كل الأعمار. والهدف من هذه الدراسة هو الوصول إلى معدل الانتشار وعوامل الاختطار الأساسية المسببة لخَلل الانتعاظ عند الرجال من كل الجنسيات الذين يراجعون مراكز الرعاية الصحية الأولية في قطر لأي سبب من الأسباب. وقد قام الـمُسْتَجْوَبون ممن تَرْبو أعمارهم على 30 عاماً (العدد = 1139) باستكمال جدول جَرْد الصحة الجنسية الخاص بالرجال بالإضافة إلى الاستبيان الخاص بسماتهم الديموغرافية، وعاداتهم الحياتية، ووجود أمراض مزمنة لديهم. وتبيَّن أن إجمالي معدل انتشار خلل الانتعاظ يبلغ 56.9% (32.7% حالة طفيفة و2.3% حالة وخيمة). وأظهرت جميع المتغيرات الاجتماعية والديموغرافية التي تم دراستها، ترابُطاً يُعْتَدُّ به إحصائياً مع خلل الانتعاظ. وتبين انخفاض معدل انتشار خلل الانتعاظ بين المدخنين وممارسي الرياضة. كما تبين أن ممارسة الجنس مع أكثر من قرين واحد، والسمنة، ووجود مرض مزمن (فرط ضغط الدم، المرض القلبي التاجي، فرط كوليسترول الدم، السكري) يترابط ترابُطاً إيجابياً يُعْتَدُّ به إحصائياً مع خلل الانتعاظ.

ABSTRACT Erectile dysfunction is a common health problem affecting the quality of life of men of all ages. The aim of this study was to find the prevalence of and significant risk factors for erectile dysfunction among men of all nationalities attending primary health care centres in Qatar for any reason. Respondents aged > 30 years (*n* = 1139) completed the sexual health inventory for men plus a questionnaire about their demographic characteristics, lifestyle habits and presence of chronic diseases. The total prevalence of erectile dysfunction was 56.9% (32.7% mild and 2.3% severe cases). All studied sociodemographic variables showed a significant association with erectile dysfunction. A lower prevalence of erectile dysfunction was found in smokers and those who exercised. More than 1 sexual partner, obesity and having a chronic disease (hypertension, coronary heart disease, hypercholesterolaemia or diabetes mellitus) were significantly positively associated with erectile dysfunction.

Prévalence du dysfonctionnement érectile et facteurs de risque chez les patients des centres de soins de santé primaires au Qatar

RÉSUMÉ Le dysfonctionnement érectile est un problème de santé fréquent influant sur la qualité de vie des hommes de tout âge. L'objectif de la présente étude était de déterminer la prévalence du dysfonctionnement érectile et les facteurs de risque importants chez les patients des centres de soins de santé primaires au Qatar, sans distinction de motif de consultation. Les répondants âgés de plus de 30 ans (n = 1139) ont rempli le questionnaire SHIM sur la santé sexuelle de l'homme, plus un questionnaire sur les caractéristiques démographiques, le mode de vie et la présence de pathologies chroniques. La prévalence totale du dysfonctionnement érectile était de 56,9 % (32,7 % modéré et 2,3 % sévère). Toutes les variables sociodémographiques étudiées étaient significativement associées au dysfonctionnement érectile. Une prévalence plus faible du dysfonctionnement érectile a été retrouvée chez les fumeurs et les sportifs. Le fait d'avoir plus d'une partenaire sexuelle, de souffrir d'obésité ou d'une pathologie chronique (comme une hypertension, une coronaropathie, une hypercholestérolémie ou un diabète sucré) était positivement et fortement associé au dysfonctionnement érectile.

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Introduction

Erectile dysfunction is a common medical problem affecting approximately 15% of men each year [1]. Over 150 million men worldwide were estimated to have been affected by erectile dysfunction in 1995, and this is projected to rise to 320 million by 2025 [2]. Severe erectile dysfunction is an independent predictor of poor quality of life and not an indicator for comorbid diseases [2]. Erectile dysfunction may have a physiological or psychological basis, but the most common cause is thought to be related to vascular abnormalities of the penile blood supply and erectile tissue often associated with cardiovascular diseases and their risk factors [3,4].

The prevalence of erectile dysfunction varies widely in studies from different countries. It was estimated to be 18.4% in men aged ≥ 20 years in the United States [3], 49.4% in Canada [5] and 63.6% in Hong Kong [6]. In a study in Qatar the prevalence of erectile dysfunction among Qatari patients was 66.2% among hypertensive patients and 23.8% among non-hypertensive controls [7].

Qatar is a small developing country with population of around 1.5 million. There are 21 primary care health centres, most of them in Doha city. No previous study has investigated the prevalence of erectile dysfunction among the general population of different nationalities with different health status in Qatar. The aim of this study therefore was to estimate the prevalence of erectile dysfunction among the men of all nationalities attending primary health care (PHC) centres for any reason, and to study significant risk factors for erectile dysfunction with the aim of developing a strategic plan to prevent and control the problem.

Methods

Sample

This was a descriptive cross-sectional study conducted in 2008 in the 21 PHC centres distributed throughout the state of Qatar. Our target population was all male patients attending all PHC centres for any reason and aged > 30 years. The inclusion criteria were age > 30 years, any nationality and agreeing to participate.

Our sample size was calculated using the *Epi-info* program. The expected prevalence used was 18% [3], and the worst acceptable prevalence was 15%, so the sample size was 1000 patients within the 99% confidence level. Because of the sensitivity of the questions, the dropout rate was considered as 10%, so the total number was 1100 patients.

We used a multistage technique to select 4 PHC centres (2 urban and 2 semi-urban) using a simple random method to ensure that the sample represented all nationalities living in Qatar. The second stage was to select about 300 patients from each centre using a systematic random method to select every 5th male patient aged > 30 years who was registered in the reception after taking his written consent to participate in the study. The next patient was selected if a patient refused to participate.

Data collection

Every recruited patient was given 2 questionnaires to complete. The first collected sociodemographic data (age, nationality, occupation, education, income (satisfied or not satisfied), number of children and some lifestyle and clinical information on possible risk factors for erectile dysfunction (presence of any chronic diseases and their duration, taking any medication, number of lifetime sexual partners). Data were collected on: smoking (ever smoked cigarettes), exercise (ever took exercise) and alcohol use (ever drank alcohol). Weight and height were measured to calculate body mass index (BMI). The BMI cutoffs were: overweight were 20–25 kg/m², obese 25–35 kg/m², morbidly obesity > 35 kg/m², normal 18–20 kg/m², subnormal < 18 kg/m². High blood pressure was systolic/diastolic blood pressure > 140/90 mmHg and diabetes mellitus was blood glucose > 126 mg/dL, not differentiated by type 1 or 2.

The second questionnaire was the sexual health inventory for men (SHIM) which includes 5 questions to identify cases of erectile dysfunction and classify them into mild, moderate or severe [8]. The Arabic version of the inventory was used.

Analysis

Epi-Info, version 6 statistical package was used for data tabulation and analysis. Chi-squared and Fisher exact tests were used for testing significance. $P < 0.05$ was considered significant.

Results

Of the 1139 respondents 649 had some degree of erectile dysfunction based on the SHIM scale, giving an overall crude prevalence of erectile dysfunction in this sample of 56.9%. A majority were mild cases (32.7%), while the remainder were classified as moderate (18.0%), moderate or severe (4.3%) or severe (2.3%).

All of the sociodemographic factors recorded—age, nationality, education, occupation, income and number of children—were significant risk factors for erectile dysfunction (Table 1). Qatari males had the highest prevalence of erectile dysfunction (64.7%), followed by other Asian males (60.7%) and men of other Arab nationalities (48.0%).

Table 2 shows the prevalence of erectile dysfunction according to some lifestyle and clinical risk factors. Males who smoked had a significantly lower prevalence of erectile dysfunction than those who did not smoke (48.6% versus 59.8%) ($P = 0.004$). Men who exercised had a lower prevalence of erectile dysfunction than those who did not (43.1% versus 69.4%) ($P < 0.001$). Alcohol consumption was not a significant risk factor for erectile dysfunction. The prevalence of erectile dysfunction among normal

Table 1 Relationship between some sociodemographic characteristics and presence of erectile dysfunction among men aged > 30 years attending primary care centres in Qatar for any reason

Variable	Erectile dysfunction		Normal		χ^2	P-value
	No.	%	No.	%		
Age (years)						
30–40	153	40.7	223	59.3	101.33	< 0.001
> 40–50	254	57.5	188	42.5		
> 50–60	179	71.9	70	28.1		
> 60	63	88.7	8	11.3		
Nationality						
Qatari	110	64.7	60	35.3	9.84	< 0.001
Other Arab	183	48.4	195	51.6		
Asian	349	60.7	226	39.3		
Other	7	43.8	9	56.3		
Education						
Illiterate	174	64.7	95	35.3	8.72	0.012
Pre-university	280	55.4	225	44.6		
University and above	195	53.4	170	46.6		
Occupation						
Unemployed	62	79.5	16	20.5	78.17	< 0.001
Clerk	216	68.8	98	31.2		
Army	12	34.3	23	65.7		
Skilled manual	319	48.0	345	52.0		
Retired	40	83.3	8	16.7		
Income					7.27	0.026
Satisfactory	442	59.6	299	40.4		
Unsatisfactory	207	52.0	191	48.0		
No. of children					19.66	< 0.001
0	51	7.9	51	10.4		
1–3	302	46.5	279	56.9		
> 3	296	45.6	160	32.7		

weight men was 52.7%, among obese men was 64.9% and among the morbidly obese was 72.4% (P < 0.001). Men who had 1 sexual partner had a lower rate of erectile dysfunction than those with > 1 partner (55.8% versus 70.3%) (P < 0.001).

There were significant positive relationships between erectile dysfunction and having a chronic disease (P < 0.001). Men suffering from hypertension, coronary heart disease, hypercholesterolaemia and diabetes mellitus had a significantly higher rate of erectile dysfunction. Those with thyroid disease, liver disease, renal disease, bronchial asthma, psychiatric disease and

cerebrovascular disease also had higher rates of erectile dysfunction although the results were not statistically significant (Table 3).

Discussion

Dunn et al., in their study of the prevalence of erectile dysfunction in the general population in England, found that its prevalence was relatively high, and concluded many people would actually like help for such a problem [9]. Claro et al. also concluded that erectile dysfunction was a widespread and very common health problem affecting the quality of life of men of all ages [10].

In our study, the prevalence of erectile dysfunction in all stages was 56.9% among men aged > 30 years, a higher figure than 49.4% in a study in Canada among males aged 40–88 years [5] and 51% in a study in the United States in a general medical setting [11]. However, our figure was lower than a Hong Kong study in 2001 which found the prevalence of erectile dysfunction was 63.6% [6]. Although our result was higher than most previous studies, it looks very high in comparison with a Chinese study which found that the overall prevalence of erectile dysfunction among men aged 35–74 years was only 16.3% [12]. These differences between our result and other studies could be explained on the basis of

Table 2 Relationship between selected lifestyle and clinical risk factors and erectile dysfunction among men aged > 30 years attending primary care centres in Qatar

Variable	Erectile dysfunction		Normal		χ^2	P-value
	No.	%	No.	%		
Smokes						0.004
Yes	138	48.6	146	51.4		
No	511	59.8	344	40.2	10.94	
Drinks alcohol						0.38
Yes	30	66.7	15	33.3		
No	619	56.6	475	43.4	1.92	
Takes exercise						< 0.001
Yes	232	43.1	306	56.9		
No	417	69.4	184	30.6	80.64	
BMI[a]						< 0.001
Subnormal	15	22.1	53	77.9		
Normal	266	52.7	239	47.3		
Overweight	273	64.5	150	35.5		
Obese	74	64.9	40	35.1	53.25	
Morbidly obese	21	72.4	8	27.6		
No. of sexual partners						
1	585	55.8	463	44.2		0.01
>1	64	70.3	27	29.7	9.23	
Surgery or vertebral column trauma						
Yes	29	59.2	20	40.8		0.75
No	620	56.9	470	43.1	0.1	
Using medication for erectile dysfunction						< 0.001
Yes	84	85.7	14	14.3		
No	565	54.3	476	45.7	36.06	

[a]Subnormal < 18 kg/m², normal 18–20 kg/m², overweight 20–25 kg/m², obese 25–35 kg/m², morbidly obesity > 35 kg/m².
BMI = body mass index.

difference in culture and methodologies used including difference in the sample sizes and sample techniques.

The prevalence of different degrees of erectile dysfunction found in the present study (32.7% mild, 18.0% moderate, 4.3% moderate to severe and 2.3% severe) can be compared with another study in the United States of 1290 individuals in which 27% of the sample population were suffering from mild erectile dysfunction, 17% moderate and 10% severe [13]. The difference could be due to different population age groups (they started from 40 years or more) and different population cultures and sociodemographic risk factors.

Regarding sociodemographic risk factors, we found that age, nationality, occupation, education level, number of children and satisfaction with income all showed significant differences between men suffering from erectile dysfunction and those who did not. This result is supported by many studies [7,9–11,14,15]. Surprisingly, Qatari males showed the highest prevalence of erectile dysfunction (64.7%) compared with other nationalities. Such a high prevalence might be explained by a lack of exercise due to the high income and urbanized lifestyle in Qatar in addition to unhealthy nutrition resulting in obesity and other chronic diseases. The high prevalence in a Hong Kong study (63.6%) [6] agrees

with our result for Asian males (60.7%). A study in Brazil found that there was no statistical difference in the rate of erectile dysfunction between men of different salary levels, which could be explained by the narrow salary difference among their population sample in comparison with the big differences in income among the population of Gulf countries [10].

Taking exercise was significantly associated with erectile dysfunction, as found by some other studies [1,3,10,12,14]. On the other hand, the finding that smokers had a lower prevalence of erectile dysfunction than non-smokers contrasts with the findings of these studies. This result raises

Table 3 Relationship between presence of chronic diseases and erectile dysfunction among men aged > 30 years attending primary care centres in Qatar

Variable	Erectile dysfunction		Normal		χ^2	*P*-value
	No.	%	No.	%		
Chronic disease						
Yes	402	74.6	137	25.4		
No	247	41.2	353	58.8	128.03	< 0.001
Hypertension[a]						
Yes	247	74.6	84	25.4		
No	402	49.8	406	50.2	58.9	< 0.001
Coronary heart disease						
Yes	19	90.5	2	9.5		
No	630	56.4	488	43.6	9.7[c]	0.002
Diabetes mellitus[b]						
Yes	275	82.6	58	17.4		
No	374	46.4	432	53.6	15.32	< 0.001
Thyroid disease						
Yes	8	72.7	3	27.2		
No	641	56.8	487	43.2	1.12[c]	0.29
Hypercholesterolaemia						
Yes	64	97.0	2	3.0		
No	585	55.5	470	44.5	13.58	< 0.001
Liver disease						
Yes	4	66.7	2	33.4		
No	645	56.9	488	43.1	0.23[c]	0.12
Renal disease						
Yes	6	85.7	1	14.3		
No	643	56.8	489	43.2	2.36[c]	0.12
Bronchial asthma						
Yes	22	64.7	12	35.3		
No	627	56.7	478	43.3	0.84	0.35
Psychiatric disease						
Yes	3	75.0	1	25.0		
No	646	56.9	489	43.1	0.53[c]	0.46
Peripheral vascular disease						
Yes	2	66.7	1	33.4		
No	647	57.0	489	43.0	0.53[c]	0.46
Cerebrovascular disease						
Yes	1	100.0	0	0		
No	648	48.9	490	51.1	0.75[c]	0.38

[a]*High blood pressure = systolic/diastolic blood pressure > 140/90 mmHg.*
[b]*Diabetes mellitus = blood glucose > 126 mg/dL, not differentiated by type 1 or 2.*
[c]*Fisher exact test.*

a question about the use of tobacco to relieve stress, which is a common problem among the expatriate population due to the high workload and insecure employment. Alcohol consumption was not a significant factor in erectile dysfunction, a finding which disagrees with a study in the United States showing a higher prevalence of erectile dysfunction among men who drank alcohol than those who did not [16]. The rate of obesity was significantly different comparing men with and without erectile dysfunction in our study. Burnett et al. in the United States [3] and Hunter Wessells et al. in China [17] also found that obesity was a significant risk factor for erectile dysfunction. Having more

than 1 sexual partner was also a significant risk factor in our study.

We found that the prevalence of erectile dysfunction was significantly higher in men suffering from certain chronic diseases—hypertension, hypercholesterolaemia, coronary artery diseases and diabetes mellitus—than those without. These findings were expected, as they correspond with those of other researchers. Fouroutan et al. supported the relation between erectile dysfunction and both coronary artery diseases and hypercholesterolaemia [1]. Many other studies agree on this finding [3,5,7,12,18,19]. For diabetes, a number of previous studies showed it to be a major risk factor for erectile dysfunction which increased with increasing duration of disease [5–7,11,15,18,20,21]. Although erectile dysfunction was also more common in men suffering from the other chronic diseases studied —thyroid diseases, liver diseases, renal diseases, cerebrovascular diseases, peripheral vascular diseases, bronchial asthma and psychiatric diseases—the differences were not significant. Rosen et al. concluded that erectile dysfunction was associated with increased age, diabetes, kidney disease, atherosclerosis, vascular disease and depression [22]. This difference was probably due to smaller size of our sample of males suffering from such conditions.

Conclusion

The high prevalence of erectile dysfunction among men attending PHC centres in Qatar is a concern. Health policy-makers need to consider including training of health personnel to consider the relevant risk factors during the physical, social and psychological diagnosis of different age and ethnic groups.

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