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ORIGINAL ARTICLE

Erectile dysfunction and associated risk factors among young Mexican adults: The importance of partner availability

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Abstract

Objective: To determine the prevalence of ED and associated risk factors among young Mexicans between 18 and 40 years of age.

Methods: An observational, cross-sectional, descriptive and analytic study was conducted. Data collection was achieved through a questionnaire. Participants completed the Urologic Health Survey for Men and the International Index of Erectile Function (IIEF-5) questionnaire. The study also included sociodemographic, clinical, and sexual behavior variables.

Results: Of the 373 questionnaires filled out, only 160 were answered completely and used for the analysis. The mean age was 25.59 ± 5.45 years. The prevalence of ED was 33.7% (mild 17.5%, mild-to-moderate 8.1%, moderate 6.3%, and severe 1.9%). The mean score for non-ED males was 24.38 ± 0.94 versus 15.41 ± 4.81 in the ED group. Univariate analysis showed a significant difference in the items of age ($p < 0.01$), having a stable sexual partner ($p < 0.01$), sleeping with the sexual partner ($p < 0.01$), sexual orientation ($p = 0.04$), and the number of sexual intercourse episodes per week ($p < 0.01$). In the multivariate analysis ''Not having a stable sexual partner'' remained a significant risk factor ($p = 0.027$, OR = 2.60 [CI 1.11–6.08]).

Conclusions: In our study, young Mexican adults had an ED prevalence of 33.7% and most of the cases were mild (17.5%). Partner availability was important. No organic variables were related to ED.

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Disfunción sexual y factores de riesgo en población de adultos jóvenes mexicanos: la relevancia de tener una pareja estable

Resumen

Objetivo: Determinar la prevalencia de DE y sus factores asociados en una población de hombres mexicanos de 18-40 años.

Materiales y métodos: Estudio observacional, transversal, descriptivo y analítico. Se utilizó un cuestionario para la recolección de información. El cuestionario incluyó el «Urologic Health Survey for Men» y el «International Index of Erectile Function 5-item». Igualmente se recabó información sociodemográfica, clínica y otras variables de comportamiento sexual.

Resultados: Se respondieron 373 cuestionarios y únicamente 160 estaban completos, que fueron los utilizados para el análisis. La media de edad fue 25.59 ± 5.45 años. La prevalencia de DE fue del 33.7% (leve: 17.5%, leve-moderada: 8.1%, moderada: 6.3% y severa: 1.9%). El puntaje promedio fue 24.38 ± 0.94 en pacientes sin-DE y 15.41 ± 4.81 en pacientes con DE. El análisis univariado mostró diferencias entre los grupos en edad (p < 0.01), «tener pareja estable» (p < 0.01), «dormir con su pareja» (p < 0.01), orientación sexual (p = 0.04) y en el número de relaciones sexuales en la última semana (p < 0.01). El análisis multivariado solo mostró diferencias significativas en «no tener una pareja estable» como factor de riesgo (p = 0.027, OR = 2.60 [IC: 1.11-6.08]).

Conclusiones: La prevalencia de DE es del 33.7% en mexicanos jóvenes (en la mayoría es leve). Tener una pareja estable es favorable. No se asociaron variables orgánicas.

Introduction

Erectile dysfunction (ED) prevalence increases with age and severely affects quality of life.[1] Despite being a frequent reason for urologic consultation, it is considered underestimated by patients, as well as under-diagnosed and under-treated, particularly in young patients. There are approximately 20 million young adults in Mexico[2] and ED[3] is increasingly being diagnosed in this age group, yet little specific information is available. International studies reported an ED prevalence of 30–35% for males between 18 and 40 years of age.[4,5] A survey by Barroso-Aguirre et al. reported a prevalence of 9.7% in Mexican young adults.[6] Several risk factors have been described for ED such as diabetes mellitus, obesity, smoking, hyperlipidemia, hypertension, low urinary tract symptoms, and low physical activity.[4,7] However, given that young adults have a lower prevalence of these types of comorbidities, other risk factors may play a greater role. The aim of this study was to determine the prevalence of ED and its associated risk factors among Mexican adults between 18 and 40 years of age.

Methods

An observational, cross-sectional, descriptive, and analytic study was designed. Proper approval by our local Ethics Committee was obtained. Young male volunteers between 18 and 40 years of age answered the Urological Health Survey for Men, together with the International Index of Erectile Function (IIEF-5) questionnaire.[8] The survey included sociodemographic, clinical, and sexual behavior variables. Participants from Mexico City were invited by e-mail or social networks to anonymously access a secure web site-hosted survey (www.surveymonkey.com/s/ESUMasculina). Invitations were sent to addresses included in databases from universities in Mexico City.

ED was graded using the IIEF-5 score, according to previously reported criteria. Patients with a score ≥22 points were considered not to have ED.[3] ED was classified into 4 groups: mild (17–21), mild-to-moderate (12–16), moderate (8–11), and severe (5–7).[8] Univariate analysis using the Student's *t* and chi-square tests was performed, and a logistic regression multivariate analysis model was used to calculate the risk factors for ED. Statistical significance was stated as *p* < 0.05. Analysis was done using the Statistical Package for Social Sciences, version 17.0 (SPSS Inc., Chicago, IL, USA).

Results

A total of 373 surveys were obtained. One hundred and sixty subjects completed the entire questionnaire and had been sexually active in the previous month, and so were included as the final sample of our study (Fig. 1). The mean age of the participants was 25.6 ± 5.4 years. The prevalence of ED was 33.7% (*n* = 54) according to the IIEF-5 (Fig. 2) and the distribution for each severity group was 17.5% (*n* = 28), 8.1% (*n* = 13), 6.3% (*n* = 10), and 1.9% (*n* = 3) for mild, mild-to-moderate, moderate, and severe, respectively (Fig. 2). The mean IIEF-5 score for healthy males was 24.4 ± 0.9 vs. 15.4 ± 4.8 in the ED group.

Seventy-eight percent of subjects were single and 21.8% were married or living with a partner (common law). In terms of educational level, 86.9% were in college or higher and 13.1% had only elementary or high school education.
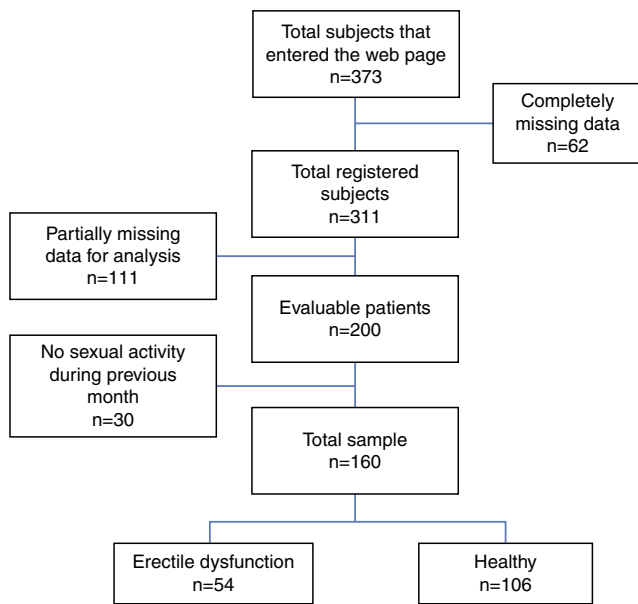
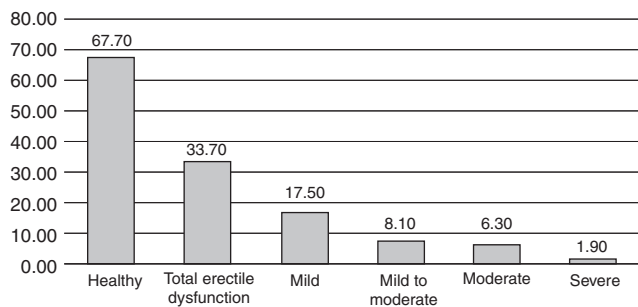**Figure 1**   Management of surveys for final analysis.

Figure 2   ED severity groups (%).

According to sexual orientation, 80.6% patients were heterosexual, 13.8% homosexual, and 5.6% bisexual. One hundred thirty-three (83.1%) patients initiated sexual activity before 20 years of age and the mean of previous sexual partners was

9.9 ± 16.1 Condom use had always been null in 21.2% of the subjects and 15.5% were unsatisfied with the size/thickness of their penis. In this group, 28.8% of the subjects were circumcised.

A univariate analysis comparing ED versus healthy groups showed a significant difference in age ($p < 0.01$). Patient comorbidities related to ED diagnosis are shown in Table 1, and there were no significant differences. No difference in educational level was found.

Table 2 shows the sexual behavior and sexual experience variables. Having a stable sexual partner ($p < 0.001$), sleeping with the sexual partner ($p < 0.001$), sexual orientation ($p = 0.04$), and the number of sexual intercourse episodes per week ($p < 0.001$) were statistically different among the groups.

All significant variables from the univariate analysis were included in a logistic regression multivariate model, which is shown in Table 3. The only variable that remained significant as a risk factor for ED was ''not having a stable sexual partner'' ($p = 0.027$, OR = 2.60 [CI 1.11–6.08]).

Discussion

The prevalence of ED in young men and the associated risk factors have been described for different populations. Table 4 shows the reported prevalence of ED in our country and in international studies. Laumann et al., one of the first authors to investigate sexual dysfunction, surveyed 1410 men 18–59 years of age in the National Health and Social Life Survey (NHSLS). He found a 7% prevalence of ED in the group of subjects 18–29 years old and 9% in the group of 30–39-year-olds.[9] Ponholzer et al., in a series with 2869 patients from Austria, reported an ED prevalence of 25.5–28.9% in patients between 20 and 50 years of age.[7] The evaluation method may modify the prevalence.[10] In a paper by Martin-Morales et al., an 8.48% prevalence of ED in the group of 25–39-year-olds was found using 6 questions (1–5 and 15) from the IIEF; the prevalence changed to 3.92% when a single direct question was used.[11]

Table 1   Univariate analysis of clinical and demographic variables related to Erectile Dysfunction Diagnosis.

Variable	Unit	Total[a] n = 160	Erectile dysfunction[a] n = 54	Healthy[a] n = 106	p value
Age	Years	24.8 ± 3.2	24.0 ± 4.2	26.4 ± 5.8	**<0.01**
Body mass index	kg/m²	25.6 ± 5.5	24.6 ± 3.2	24.9 ± 10.6	0.63

Variable	Reference	Total [n (%)] n = 160	Erectile dysfunction [n (%)] n = 54	Healthy [n (%)] n = 106	p value
Diabetes mellitus	Yes	0 (0)	0 (0)	0 (0)	0.90
Arterial hypertension	Yes	1 (0.6)	0 (0)	1 (0.9)	0.49
Dyslipidemia	Yes	2 (1.3)	0 (0)	2 (1.9)	0.33
Exercise	Yes	110 (68.8)	39 (72.2)	71 (67.0)	0.43
Depression	Yes	6 (3.8)	5 (9.3)	1 (0.9)	0.19
Smoking	Yes	42 (26.2)	16 (29.6)	26 (24.5)	0.65
Education	College/higher	139 (86.9)	47 (87.0)	92 (86.8)	0.67
	Lower	21 (13.1)	7 (13.0)	14 (13.2)	

[a] Mean ± standard deviation.

Table 2 Univariate analysis of sexual behavior and sexual experience variables related to Erectile Dysfunction Diagnosis.

Variable	Unit	Total[a] n = 160	Erectile dysfunction[a] n = 54	Healthy[a] n = 106	p value
Total previous sexual partners	n	9.9 ± 16.1	7.1 ± 9.1	10.2 ± 16.5	0.12
Sexual partners (previous month)	n	1.2 ± 1.2	1.0 ± 0.9	1.3 ± 1.1	0.6
Episodes of sexual intercourse (previous week)	n	1.5 ± 0.9	1.0 ± 0.7	1.9 ± 1.0	**<0.01**

Variable	Reference	Total [n (%)] n = 160	Erectile dysfunction [n (%)] n = 54	Healthy [n (%)] n = 106	p value
Circumcision	Yes	46 (28.8)	11 (20.3)	35 (33.0)	0.21
Contraception (condom)	Never	34 (21.2)	12 (22.2)	22 (20.8)	0.18
	Sometimes	51 (31.8)	14 (25.9)	37 (34.9)	
	Always	75 (46.9)	28 (51.9)	47 (44.3)	
PDE5 inhibitor	Yes	18 (11.3)	5 (9.3)	13 (12.3)	0.76
Drug abuse	Yes	5 (3.1)	3 (5.5)	2 (1.9)	0.57
Stable sexual partner	Yes	113 (70.6)	26 (48.1)	87 (82.1)	**<0.01**
Sleeps with sexual partner	Yes	69 (43.1)	13 (24.1)	56 (52.8)	**<0.01**
Marital status	Married[b]	35 (21.8)	8 (14.8)	27 (25.4)	0.06
	Single	125 (78.2)	46 (85.2)	79 (74.6)	
Sexual orientation	Heterosexual	129 (80.6)	35 (64.8)	94 (88.7)	**0.04**
	Homosexual	22 (13.8)	14 (25.9)	8 (7.5)	
	Bisexual	9 (5.6)	5 (9.2)	4 (3.8)	
Satisfaction with size/thickness of penis	Satisfied	135 (84.4)	41 (75.9)	94 (88.7)	0.18

[a] Mean ± standard deviation.
[b] Including living with a partner (common law).

Table 3 Logistic multivariate analysis: risk factors for ED.

Variable	Reference	OR	CI (95%)	p value
Age (years)	<30	0.45	0.12–1.67	0.29
Marital status	Married/cohabitation	0.52	0.11–2.49	0.41
Sexual orientation	Heterosexual	1.61	0.64–4.07	0.30
Stable sexual partner	Not having one	2.60	1.11–6.08	**0.027**
Sexual intercourse per week	Fewer than 3 episodes	6.84	0.85–54.89	0.07
Sleeps with partner	Yes	1.83	0.61–5.47	0.27

Table 4 Reported erectile dysfunction prevalence in young adults in Mexico and the rest of the world.

Author	Year	Country	n	Age	Prevalence (%)	ED measurement
Barroso-Aguirre[10]	2001	Mexico	1800	18–40	9.7	IIEF
Hernández-Moreno[18]	2004	Mexico	452	18–41	16	IIEF
Actual series	2013	Mexico	373	18–40	33.8	IIEF
Laumann[13]	1999	USA	1249	30–39	9	Direct question
Braun[19]	2000	Germany	4489	30–39	2.3	KEED
Martín-Morales[15]	2001	Spain	2476	25–39	8.48	IIEF
Heruti[16]	2004	Israel	5836	25–55	26.9	SHIM
Ponholzer[7]	2005	Austria	2869	20–30	25.5–28.9	IIEF
Rynja[9]	2009	Netherlands	151	17–35	33.6	IIEF
Martins[17]	2010	Brazil	1947	18–40	35	Direct question
Bayraktar[2]	2011	Turkey	5438	18–39	1.9	IIEF

Using a validated questionnaire (IIEF-5, IIEF 1–5 + 15, SHIM) generally results in discrete discrepancies in ED prevalence across populations. Heruti et al., from Israel, found a prevalence of 26.9% from a sample of 5836 men 25–55 years old.[12] Rynja et al. showed a prevalence of 33.6% in a sample of 151 men aged 17–35 years from the Netherlands.[5] Laumann et al. reported a prevalence of 9% in the group of 30 to 39-year-olds.[9] Martins et al. published a study done in Brazil, where a 35% ED prevalence was reported in subjects from 18 to 40 years of age.[13]

Besides differences among evaluation methods, ED prevalence variations could be explained by the following factors: sociocultural differences, life-style, education, author biases, selection criteria, statistical analysis, and efficiency of health services. We evaluated a particular population sample with specific characteristics. Our participants came from Mexico City, an almost 100% urban area with access to the Internet, so people with a mid-high socioeconomic status and mid-high educational level were included. We acknowledge this limitation. However, despite being a limited sample, its characteristics and behavior can be transferred to other similar populations.

Classic papers by Laumann et al. and Ponholzer et al. described risk factors that have been confirmed by other authors. They include age, educational and socio-economic status, comorbidities, depression, sexual abuse history, and lower urinary tract symptoms.[7,9] However, we found that partner availability and previous sexual background were significant factors for ED in this population. On the one hand, having a stable sexual partner to sleep with was related to normal sexual function. Also, having fewer sexual partners (previous month) and fewer episodes of sexual intercourse (per week) was related to ED. Sexual preference was also a significant variable, with a greater homosexual and bisexual predilection in the ED group.

In regard to the relation between sexual preference and sexual dysfunction (SD), there are previous reports in a specific population of men that have sex with men (MSM). Two representative studies used items from the NHSLS, obtaining a prevalence of 74–79% of subjects with at least one SD symptom. They found that symptoms, such as performance anxiety, low sexual desire, erection problems, or sex not being pleasurable were related to SD.[14,15] On the other hand, Lau et al. found that 42.5% of Chinese MSM had at least one SD symptom (pain during sex, 13.8%; premature ejaculation, 10.4%; anxiety, 18.7%; erectile problems, 6.3%; no pleasure, 13.8%; no orgasm, 5.6%; hypoactive sexual desire, 8.3%).[16] Breyer et al. reported a higher rate of ED in homosexual men, compared with heterosexual men (24% vs. 12%, respectively, $p = 0.019$).[17]

Partner availability emerges as an important risk factor in this age group. Previous reports describing ''lack of partner availability'' as a risk factor for ED are described in older adult populations. They mainly focus on the impact of marital status and partner's health status.[18,19] Our results show that having an available partner is also important in this particular age group. It may have an impact on the frequency of sexual intercourse, as well as the experience and comfort gained with the partner. Interestingly, younger age was a risk factor for ED in our analysis. We believe that it is mainly related to stable partner availability, but it could also be related to what we might call ''developed sexual skills''.

Despite the fact that we cannot prove a causal relationship, we feel that more frequent intercourse and a wider variety of sexual partners may aid in developing a more satisfactory sexual practice.

ED has been related to organic diseases such as hypertension or diabetes mellitus. A validated comorbidity index questionnaire was not included. However, given the low prevalence of chronic diseases in this age group, we consider it may not have influenced our global results.

Another weakness of our study was the lack of a global evaluation of psychosocial factors. Since only depression was directly queried and was not recognized as a risk factor, a complete psychological evaluation would have been ideal. Recent studies suggest that poor mental health, stress, anxiety, or alexithymia may have an impact on ED.[20,21] The method by which the survey was completed precludes an easy evaluation, but we plan to include at least a validated questionnaire in future studies.

Finally, a validated quality of life analysis was not done. Most of the participants had mild ED, but we did not measure its impact. We did not directly evaluate socioeconomic status, but the survey was web-hosted, which may reflect a relatively higher and educated socioeconomic group.

Conclusions

In our study, young Mexican adults had an ED prevalence of 33.7% and most of the cases were mild (17.5%). We found that a younger age, homosexual orientation, not having a stable sexual partner, not sleeping with a partner, and a lower number of sexual intercourses per week are factors related to ED in the univariate analysis. The only significant risk factor in the multivariate analysis was not having a stable sexual partner. Sexual experience and partner availability are important factors influencing ED in young male subjects.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this investigation.

Confidentiality of data. The authors declare that no patient data appears in this article.

Right to privacy and informed consent. The authors declare that no patient data appears in this article.

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Conflict of interest

The authors declare that there is no conflict of interest.

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