PREVALENCE OF ERECTILE DYSFUNCTION IN YOUNG SAUDI POPULATION

Yousef almarzouq[1], Mohammed Altheneyan[1], Nasser Alhazzani[1], Aseel Almarzouq[2], Mohammed Sammour[3].

[1]Department of Urology, Ministry of National Guard - Health Affairs, Alhassa Saudi Arabia.
[2]Medical Student, College of Medicine, King Faisal university in Alhassa Saudi Arabia.
[3]Urology Consultant, Urology Division, Surgery Department, Ministry of National Guard - Health affairs, Alhassa, Saudi Arabia.

Abstract:
Background: Erectile dysfunction (ED) has been one of the most prevalent complaints among men with sexual health difficulties. ED is the inability to attain or sustain an erection satisfactory for sexual intercourse. Aim: This study aims to assess the prevalence of erectile dysfunction among married males in Saudi Arabia. Methodology: This study adapted a cross-sectional study design. We collected data by distributing a pre-designed questionnaire that includes a section for sociodemographic data and the Arabic translation of the short version of the International Index of Erectile Function (IIEF), which consists of 5 questions utilized to diagnose and assess the severity of ED. Collected data were managed using the Statistical Package for Social Sciences (SPSS) version 26. Results: The study included 194 participants of whom 39.2% were 31 to 40 years old. Most of the participants were in a monogamous marriage (81.4%), whereas 15.5%, 1.5%, and 1.5% had two, three, and four partners, respectively. Mild ED was prevalent among 66.5% of participants, whereas 2.6% and 1% had moderate and severe ED, respectively. The average IIEF-5 score ± standard deviation (SD) was 18.2±3.3. Since males who were not employed had higher rates of moderate (3.4%) and severe (6.9%) ED, there was a significant relationship between ED severity and occupation (p=0.014). Similarly, since 18.2% of people with chronic conditions also had severe ED, the presence of chronic diseases was significantly related with ED severity (p=0.000). Conclusion: Our study concludes that levels of moderate and severe ED are less prevalent when compared with international reports. ED was significantly more prevalent among unoccupied men and those with chronic diseases.

Corresponding author:
Yousef almarzouq,
Department of Urology,
Ministry of National Guard - Health Affairs,
Alhassa Saudi Arabia.

QR code

BACKGROUND:

Human sexual and reproductive health are critical components of life (Djossa Adoun et al., 2011). Sexual dysfunction or difficulty refers to a range of conditions that interfere with the normal physical and psychological functioning of the sexual and reproductive systems, making it difficult for individuals to engage in satisfying sexual activities (Vecchio et al., 2010). Following an early analysis of the incidence and prevalence of sexual dysfunction by Spector and Carey (1990), several studies of the prevalence of sexual dysfunction have been published since 2000 (Hatzimouratidis, 2007; Ho, et al., 2011; Ramezani, et al., 2015; Simons & Carey, 2001; McCabe, et al., 2016). According to a study by Spector and Carey (1990), prevalence estimates for erectile dysfunction varied from 4% to 9% and 4% to 9% for male orgasmic disorder, respectively, while the estimated prevalence for premature ejaculation was between 36% and 38%. Another study by Simons and Carey (2001), based on 52 papers published between 1990 and 1999, found that the incidence of erectile dysfunction varied from 0% to 5%, male orgasmic disorder was 0% to 3%, premature ejaculation was 4% to 5%, and hypoactive sexual desire disorder was 0% to 3% (Simons & Carey, 2001). Men's sexual dysfunction is linked to a variety of factors, including psychosocial factors including depression, job loss, low self-esteem, financial difficulties, drug abuse, and smoking, as well as comorbid illnesses like diabetes, heart disease, and hypertension (Hatzimouratidis, 2007; Hendrickx, et al., 2014; Derogatis & Burnett, 2008; Maiorino, et al., 2014). Up to our knowledge, the present data on the prevalence of sexual male dysfunction in Saudi Arabia is scanty.

Study aim

This study aims to assess the prevalence of erectile dysfunction among married males in Saudi Arabia.

Objectives

- Estimating prevalence of undiagnosed Erectile dysfunction in healthy young males in the Saudi population.
- Identify correlation between Erectile dysfunction in healthy young male and with any psychological or environmental factors.

METHODOLOGY:

Study design

This study is a cross-sectional study.

Study population

Our targeted subjects are healthy males with no previous established diagnosis of ED or any identified condition which is medically known to cause or lead to ED, previously established diagnosis of ED or any medical condition or pharmacological agents which may cause or lead to ED is excluded from this study.

Inclusion criteria

- Saudi males
- Aged 25-45 years
- Married and living with wife
- Free from chronic diseases

Exclusion criteria

- Previous pelvic trauma
- Known cases of metabolic disease (diabetes mellitus hypertension dyslipidemia) and sickle cell disease
- History of instrumentation
- Penile, pelvic, or scrotal surgeries
- Alcohol or any substance abuse
- Known case neurological disease
- Psychiatric illness
- History of testicular torsion or undescended testicle

Study tools

The data collection tools include a section for sociodemographic data and the Arabic translation of the short version of the International Index of Erectile Function (IIEF), which consists of 5 questions.

A Scoring system of 25 points with a minimum score of 5 points is used, called The International Index of Erectile Function (IIEF-5) Questionnaire or the Sexual Health In Men (SHIM) score, where 5 Questions are answered accordingly as very high, high, moderate, low, or very low and a total score is calculated at the end of the questionnaire. The total score is categorized as no ED (22-25), mild ED (17-21), mild to moderate ED (12-16), moderate ED (8-11), or severe ED (5-7).

Data collection

The questionnaire is translated to Arabic and then back to English for confirmation. The Arabic version of the questionnaire is answered by the subject with confidentiality and privacy of the subject when filling the questionnaire. One of the members of the team was present at the time to clarify any query on the questionnaire. Our main targets for this study were young to middle-aged (20-50) married Saudi males who are randomly selected in health care clinics or any public gathering areas.

Statistical analysis

Data entering and interpretation were made by using Statistical Package for the Social Sciences (SPSS)

version 26. The analysis comprised descriptive statistics and inferential statistics containing the scores as well as other variables such as age and others. We used the Chi-square test for inferential analysis.

RESULTS:

The study included 194 participants of whom 39.2% were 31 to 40 years old, and 33% were 41 to 64 years old. The majority of respondents were from the Eastern region (86.6%), and were residing in urban areas (90.2%). Most of the participants were in a monogamous marriage (81.4%), whereas 15.5%, 1.5%, and 1.5% had two, three, and four partners, respectively.

As shown in table 1, nearly all participants resided with their partner(s) all week days (98.5%). Over a quarter (26.8%) of participants had an arranged marriage and of 28.4% of all participants were not excited for their marriage (28.4%). University graduates constituted 56.7% of respondents and 85% of participants are occupied. Chronic diseases were reported by 5.7% of respondents.

Table 2 shows the responses of participants to the IIEF-5 scale items and scores. Mild ED was prevalent among 66.5% of participants, whereas 2.6% and 1% had moderate and severe ED, respectively. The average IIEF-5 score $\pm$ standard deviation (SD) was 18.2±3.3.

The majority of respondents have high (39.2%) and very high (46.9%) confidence that they can get and maintain an erection, always (32%) and most of the times (30.4%) had erections hard enough for penetration, always (36.6%), and most of the times (28.4%) were able to maintain an erection of penetration, always (30.4%), and most of the times (31.4%) had a satisfactory intercourse. It was reported by 40.7% that maintaining an erection to completion of intercourse is extremely difficult.

Table 3 shows the association between erectile dysfunction severity and sociodemographic and marital history determinants. ED severity was significantly associated with occupational status (p=0.014), as moderate (3.4%) and severe (6.9%) ED were more prevalent among non-occupied men. Presence of chronic diseases was also associated with severity of ED (p=0.000) as 18.2% of those who have chronic disease had severe ED.

Figure 1 demonstrates a negative correlation between age and IIEF-5 score (-0.181). The Pearson correlation test was used and revealed that the relationship is significant (p=0.012).

Table 1: Sociodemographic factors and marital history of participants (n=194).

Parameter		Frequency (%)
Age, y	**20 -**	54 (27.8%)
	31 -	76 (39.2%)
	41 - 64	64 (33%)
Region of residency	**Southern region**	3 (1.5%)
	Eastern region	168 (86.6%)
	Northern region	12 (6.2%)
	Central region	11 (5.7%)
Type of residency	**Bedouin area**	2 (1%)
	Urban area	175 (90.2%)
	Rural area	17 (8.8%)
Marital status	**Monogamous marriage**	158 (81.4%)
	Polygamy (two partners)	30 (15.5%)
	Polygamy (three partners)	3 (1.5%)
	Polygamy (four partners)	3 (1.5%)
Residing with partner all week days	**No**	3 (1.5%)
	Yes	191 (98.5%)
My marriage was	**An arranged marriage**	52 (26.8%)
	By my choice	142 (73.2%)
Were you excited for your marriage?	**To some extent**	24 (12.4%)
	No	55 (28.4%)
	Yes	115 (59.3%)
Educational level	**Primary education**	3 (1.5%)
	Intermediate education	17 (8.8%)

	Secondary education	63 (32.5%)
	University education	110 (56.7%)
	Illiterate	1 (0.5%)
Nationality	**Saudi**	189 (97.4%)
	Non-Saudi	5 (2.6%)
Occupation status	**Occupied**	165 (85.1%)
	Non-occupied	29 (14.9%)
Chronic diseases	**No**	183 (94.3%)
	Yes	11 (5.7%)

Table 2: IIEF-5 items and responses among participants (n=194).

Parameter		Frequency (%)
How do you rate your confidence that you could get and keep an erection?	Very low	2 (1%)
	Low	5 (2.6%)
	Moderate	20 (10.3%)
	High	76 (39.2%)
	Very high	91 (46.9%)
When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	Almost never/never	11 (5.7%)
	A few times	11 (5.7%)
	Sometimes	51 (26.3%)
	Most times	59 (30.4%)
	Almost always/always	62 (32%)
During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?	Almost never/never	9 (4.6%)
	A few times	21 (10.8%)
	Sometimes	38 (19.6%)
	Most times	55 (28.4%)
	Almost always/always	71 (36.6%)
During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?	Extremely difficult	79 (40.7%)
	Very difficult	11 (5.7%)
	Difficult	34 (17.5%)
	Slightly difficult	70 (36.1%)
When you attempted sexual intercourse, how often was it satisfactory for you?	Almost never/never	3 (1.5%)
	A few times	16 (8.2%)
	Sometimes	55 (28.4%)
	Most times	61 (31.4%)
	Almost always/always	59 (30.4%)
ED Severity	No ED	13 (6.7%)
	Mild ED	129 (66.5%)
	Mild to moderate ED	45 (23.2%)
	Moderate ED	5 (2.6%)
	Severe ED	2 (1%)
IIEF-5 Score	Score, Mean±SD (Min-Max)	**18.2±3.3 (5-24)**

Table 3: IIEF-5 scores in association with sociodemographic factors and marital history (n=194).

Parameter		IIEF-5 Scoring					P-value*
		No ED	Mild ED	Mild to moderate ED	Moderate ED	Severe ED	
Age, y	**20 -**	2 (3.7%)	39 (72.2%)	11 (20.4%)	2 (3.7%)	0 (0%)	0.524
	31 -	7 (9.2%)	47 (61.8%)	20 (26.3%)	2 (2.6%)	0 (0%)	
	41 - 64	4 (6.3%)	43 (67.2%)	14 (21.9%)	1 (1.6%)	2 (3.1%)	
Region of residency	**Southern region**	0 (0%)	3 (100%)	0 (0%)	0 (0%)	0 (0%)	0.962
	Eastern region	12 (7.1%)	111 (66.1%)	39 (23.2%)	4 (2.4%)	2 (1.2%)	
	Northern region	1 (8.3%)	8 (66.7%)	3 (25%)	0 (0%)	0 (0%)	
	Central region	0 (0%)	7 (63.6%)	3 (27.3%)	1 (9.1%)	0 (0%)	
Type of residency	**Bedouin area**	0 (0%)	1 (50%)	1 (50%)	0 (0%)	0 (0%)	0.490
	Urban area	12 (6.9%)	117 (66.9%)	41 (23.4%)	3 (1.7%)	2 (1.1%)	
	Rural area	1 (5.9%)	11 (64.7%)	3 (17.6%)	2 (11.8%)	0 (0%)	
Marital status	**Monogamous marriage**	12 (7.6%)	102 (64.6%)	37 (23.4%)	5 (3.2%)	2 (1.3%)	0.977
	Polygamy (two partners)	1 (3.3%)	22 (73.3%)	7 (23.3%)	0 (0%)	0 (0%)	
	Polygamy (three partners)	0 (0%)	3 (100%)	0 (0%)	0 (0%)	0 (0%)	
	Polygamy (four partners)	0 (0%)	2 (66.7%)	1 (33.3%)	0 (0%)	0 (0%)	
Living with partner all week days	**No**	0 (0%)	3 (100%)	0 (0%)	0 (0%)	0 (0%)	0.820
	Yes	13 (6.8%)	126 (66%)	45 (23.6%)	5 (2.6%)	2 (1%)	
My marriage was	**Arranged marriage**	1 (1.9%)	34 (65.4%)	14 (26.9%)	2 (3.8%)	1 (1.9%)	0.427
	My choice	12 (8.5%)	95 (66.9%)	31 (21.8%)	3 (2.1%)	1 (0.7%)	
Were you excited for your marriage?	**To some extent**	2 (8.3%)	18 (75%)	4 (16.7%)	0 (0%)	0 (0%)	0.947
	No	4 (7.3%)	35 (63.6%)	14 (25.5%)	1 (1.8%)	1 (1.8%)	
	Yes	7 (6.1%)	76 (66.1%)	27 (23.5%)	4 (3.5%)	1 (0.9%)	
Educational level	**Primary education**	0 (0%)	0 (0%)	3 (100%)	0 (0%)	0 (0%)	0.387
	Intermediate education	2 (11.8%)	9 (52.9%)	6 (35.3%)	0 (0%)	0 (0%)	
	Secondary education	5 (7.9%)	46 (73%)	11 (17.5%)	1 (1.6%)	0 (0%)	
	University education	6 (5.5%)	73 (66.4%)	25 (22.7%)	4 (3.6%)	2 (1.8%)	
	Illiterate	0 (0%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	
Nationality	**Saudi**	13 (6.9%)	125 (66.1%)	44 (23.3%)	5 (2.6%)	2 (1.1%)	0.952
	Non-Saudi	0 (0%)	4 (80%)	1 (20%)	0 (0%)	0 (0%)	
Occupati	**Occupied**	12 (7.3%)	109 (66.1%)	40 (24.2%)	4 (2.4%)	0 (0%)	**0.014**

on status	Non-occupied	1 (3.4%)	20 (69%)	5 (17.2%)	1 (3.4%)	2 (6.9%)	
Chronic diseases	No	12 (6.6%)	123 (67.2%)	43 (23.5%)	5 (2.7%)	0 (0%)	0.000
	Yes	1 (9.1%)	6 (54.5%)	2 (18.2%)	0 (0%)	2 (18.2%)	
Chi-square test was used.							

Figure 1: Simple Scatter with Fit Line of IIEF-5 score by age
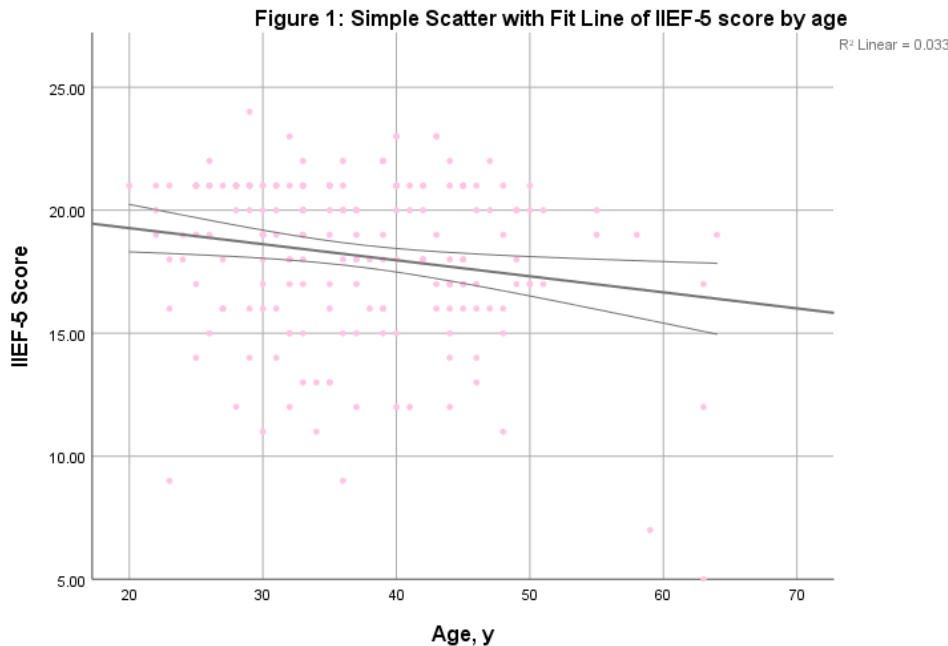
DISCUSSION:

Erectile dysfunction (ED) has been one of the most prevalent complaints among men with sexual health difficulties, despite the fact that sexuality is a fundamental aspect of life (Akkus et al., 2002). ED is the inability to attain or sustain an erection satisfactory for sexual intercourse.

According to the Massachusetts Male Aging Research Study (MMAS) on the prevalence on ED, which was carried out in 1999, 152 million men may be affected by ED globally, and by 2025, that number is expected to rise to 322 million (Ayta et al., 1999). According to other studies, such as Selvin et al. work in the USA, 18.4% of adults over 20 have ED. The survey also revealed that around 18 million males in the USA suffered with ED (Selvin et al., 2006).

Our study included 194 participants whose age ranged from 20 to 64 years. Our study utilized the IIEF-5 scale and found that 66.5% of individuals had mild ED, compared to 2.6% who had moderate ED and 1% who had severe ED. Globally, it is believed that 20% to 30% of adult males suffer from some sort of sexual dysfunction (Lewis, et al., 2010). That

estimate was based on research done between 2002 and 2009. Males' most prevalent sexual problem was premature ejaculation (8% -30%). Desire dysfunction was estimated to be between 8% and 18%, whereas orgasm issues were estimated to be between 12% and 19%. The most researched male sexual problem, erectile dysfunction, has a wide range of prevalence estimates. The lowest estimates rates varied from 6% to 18%, while the highest estimates rates ranged from 32% to 35%.

A meta-analysis aimed to estimate the prevalence of ED in mainland China reported that the pooled prevalence was 49.7%. Similar to our findings, their study also concluded a negative correlation between age and erectile function (Wang et al., 2016).
Higher ED rates were reported in France as in population-based research conducted among males aged 40 to 80 years old, it was shown that 15.0% of sexually active men had erectile dysfunction, 13.0% had lack of sexual desire, and 9.9% had difficulty to attain orgasm (Buvat et al., 2009).

According to our study, since males who were not employed had higher rates of moderate (3.4%) and

severe (6.9%) ED, there was a significant relationship between ED severity and occupation (p=0.014). Similarly, since 18.2% of people with chronic conditions also had severe ED, the presence of chronic diseases was significantly related with ED severity (p=0.000).

This was in line with the MMAS study that reported a strong significant association between lifestyle and medical condition with ED.

CONCLUSION:
Our study concludes that levels of moderate and severe ED are less prevalent when compared with international reports. ED was significantly more prevalent among unoccupied men and those with chronic diseases.

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