

## Original Research Article

# Role of lifestyle and psychological variables in erectile dysfunction: a cross-sectional study

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## ABSTRACT

**Background:** Erectile dysfunction (ED) is a highly prevalent yet underestimated disorder among men, associated with a significant burden of illness. The understanding of pathophysiological factors has led to better assessment of the disease yet a lot of patients are left dissatisfied and undertreated. The study was undertaken to elicit the various life style and psychological variables associated with ED.

**Methods:** A cross-sectional study was conducted on cases of ED reporting in urology OPD in 3 months period. A pretested semi structured questionnaire was used as a data collection tool. ED was addressed in five domains using International index of erectile function (IIEF) scale. Information collected included socio demographic factors, life style variables and psychological factors [perceived stress (PT), self-esteem (SST) and erectile performance anxiety (ET)]. Data collected was analyzed using independent sample t test.

**Results:** A total of 155 cases of ED participated in the study. Their mean age was 33.93±5.05 years (range 25-48). 80.6% were non-smokers, 54.8% were alcoholic and 22.6% patients performed light physical activity. There was no statistically significant association between different life style variables with five domains of International index of erectile function except for the domain of orgasmic function with consumption of drugs (p=0.017) and intercourse satisfaction with physical activity (p=0.045). Barring the domain of overall satisfaction most of the other domains of ED showed a significant association with psychological variables.

**Conclusions:** Contrary to lifestyle factors, psychological factors are significantly related to ED and need to be addressed effectively for improving patient treatment outcome.

**Keywords:** ED, Erectile performance anxiety, IIEF

## INTRODUCTION

Erectile dysfunction (ED) is the persistent lack of ability to attain and maintain an erection which is sufficient to permit satisfactory sexual performance.<sup>1</sup>

Erection is a complex interplay of phenomenon like arterial dilation, trabecular smooth muscle relaxation, and

activation of the corporeal veno-occlusive mechanism and requires a coordinated equilibrium between the neurological, vascular and the tissue compartments.

ED may occur as a result of vasculogenic, neurogenic, anatomical, hormonal, drug-induced and/or psychogenic factors.<sup>2</sup> Burden of disease on men suffering from ED in particular and also on their partners has a significant

physical and emotional impact on them which ultimately has a bearing on their quality of life (QoL).<sup>3-5</sup> In spite being the most common sexual dysfunction prevalent among men worldwide yet it is usually underestimated as it does not lead to mortality. Stigmatization of ED affects the patients "social role" and makes them to suffer in isolation.

Significant disability in terms of lack of self-confidence, disturbed relationships, mental distress, anxiety and depression is often common in these patients, yet very few men come forward for treatment.<sup>6-8</sup> Embarrassment and disbeliefs regarding treatment among the patients, improper expertise of health providers and hostile atmosphere in the health institutions has been often implicated in deficiency of treatment seeking behavior among patients of ED.<sup>9,10</sup>

As such, a thorough work-up including elicitation of risk factors coupled with necessary laboratory tests and integrated with clinical picture helps to diagnose and develop a treatment plan to manage these patients effectively.<sup>11</sup>

Different protocols of diagnosis and treatment have always been the matter of interest for clinicians worldwide with the problem still showing a significant prevalence. There is a need to have a relook into various associated factors to develop an effective intervention strategy.

As there is very little data of ED available from this region so this study was conducted with the objective to study the various lifestyle and psychological variables and elicit their association in patients of erectile dysfunction.

## **METHODS**

A cross sectional study was conducted in the OPD settings of a tertiary care hospital. All the subjects (male) of erectile dysfunction who reported in the urology OPD during a period of 3 months were treated as per protocol. Those who gave verbal consent to participate in the study were further interviewed by a medical officer.

The subjects were allowed to respond in their own time and privacy. Firstly, the information was collected to elucidate lifestyle and psychological variables of ED followed by clinical examination and relevant investigations.

### **Collection of data**

A self-administered, anonymous, pretested, semi structured questionnaire enquiring about demographic profile, personal history, dietary history, physical activity, H/o past sexual trauma, drug history and addictions if any was used. If a person had consumed alcohol in the last six months he was classified as alcoholic, for those who were

alcoholic, were asked about the amount and frequency of drinking.

Non-smokers or ex-smokers were the ones who had not smoked in the last 5 years or 6 months respectively. Further, smokers were asked questions regarding type and frequency of smoking. History of any neurological disorder, prostate gland surgery, being a long distant bicycle rider or coronary artery disease was also elucidated. Details of physical activity and any significant past medical history were also enquired.

### **Assessment of erectile dysfunction**

The international index of erectile function (IIEF) which is a multidimensional scale consisting of 15-item questionnaire was used, it addresses dysfunction in five domains i.e. erectile function (EFT), orgasmic function (OTO), sexual desire (SDTO), intercourse satisfaction (ISTO), and overall satisfaction (OSTO).<sup>12</sup> Lower the scores more is the severity.

### **Measures to elucidate the psychological variables**

For perceived stress (PT), perceived stress scale was used.<sup>13</sup> For self-esteem, Rosenberg self-esteem scale (SST) was used.<sup>14</sup> Erectile Performance Anxiety Index (EPAI)- a 10-item self-report scale was used for the assessment of male erectile performance anxiety (ET).<sup>15</sup> Higher the scores of perceived stress (PT) and male erectile performance anxiety (ET) more is the severity and in case of SST as the score increases, lower is the self-esteem. For the purpose of analysis mean score of all these variables were calculated and they were further categorised as 1 (below the mean) and 2 (equal to and above the mean).

### **Examination and investigations**

Participants were subjected to weight and height measurement and BMI was calculated. Weight in kg and height in cms were measured using standard methodology as per WHO guidelines.<sup>16</sup> Body mass index (Quetelet index) was calculated using formula  $BMI = Wt (kg)/Ht (m^2)$  and  $\geq 30$  was interpreted as obese.<sup>17</sup> The reported physical activity was categorised as light, moderate and active.<sup>18</sup> Blood pressure was measured using mercury sphygmomanometer. The investigations included blood sugar (random) and blood cholesterol levels.

### **Exclusion criteria**

Patients with history of neuropsychiatric disorders or neurological disorders were excluded.

### **Statistical analysis**

The information collected was compiled, tabulated and analysed. Descriptive Statistics were used for the

demographic profile of subjects and anthropometric measurements and summarized as mean±standard deviation (SD).

Independent sample t test was performed for continuous data to find the significance of difference of means of various measures. A p value of less than 0.05 ( $p < 0.05$ ) was considered statistically significant. Information collected was analysed using computer software SPSS version 20.0.

## RESULTS

A total of 158 patients reported in the urology OPD of a tertiary care hospital in a three-month period. 155 subjects consented to participate in the study.

Table 1 shows that the mean age was  $33.93 \pm 5.05$  years (range 25-48). Out of the 135 subjects who were married 5 (3.70%) had marital discord. 15 (9.67%) cases were single, 4 (2.58%) were divorced, 1 (0.64%) was widower, 5 (3.22%) were Homosexual and 4 (2.58%) were

bisexual. More than half (64.5%) patients were well educated and had done post-graduation. Almost all the subjects were employed with mean family income (in Indian rupees) of  $5.08 \pm 2.04$  lacs per annum. 20 (12.9%) patients gave history of past sexual trauma.

None of the patient had undergone prostrate surgery or was a long distant bicycle rider. 70.96% patients reported as being moderately active. The mean cholesterol levels were  $160 \pm 24.35$  (range- 110-203). The mean±SD for PT, SST and ET were  $8.38 \pm 3.37$  (3-15),  $25.22 \pm 4.23$  (14-36) and  $40.22 \pm 3.88$  (33-46) respectively.

Table 2 shows that 67.7% patients consumed anxiolytic drugs. The mean BMI was  $24.37 \pm 3.52$  (range 18-30.49). Although the mean scores were more in those who were alcoholic, smoked, consumed drugs, performed light physical activity and had normal BMI yet this difference among all the variables across different domains of ED was statistically insignificant except in the domain of orgasmic function for consumption of drugs and intercourse satisfaction based on physical activity.

**Tables 1: Demographic profile of patients with erectile dysfunction (n=155).**

Demographic characteristics	No (n=155)	%
<b>Age (in years)</b>		
<35	95	61.29
≥35	60	38.70
<b>Marital status</b>		
Married	135	87.09
Single/divorced/widower	20	12.90
<b>Education</b>		
Graduation and below	55	35.48
Post graduation	100	64.51
<b>Employment</b>		
Employed	140	90.32
Unemployed	5	3.22
<b>Type of employment</b>		
Business	61	43.57
Labour	48	34.28
Service	27	19.28
Others	4	2.85
<b>Income/annum</b>		
<5.08 lac	52	33.54
≥ 5.08 lac	103	66.45

Table 3 shows depicts that barring the domain of overall satisfaction, most of the remaining domains showed a statistically significant difference between two groups (below the mean score and equal to and more than the mean score) of various psychological variables. Table 4 shows that the mean score for Erectile Performance

Anxiety Index was more in those who performed light activity as compared to those who indulged in moderate to heavy activity and this difference was statistically significant ( $p=0.038$ ). The differences in scores of Erectile Performance Anxiety Index for rest of the life style variables were not statistically significant.

**Table 2: Association of different life style variables with five domains of International index of erectile function using Independent sample t test.**

Life style variables	International Index of erectile function (IIEF) (Mean ± SD)					
	No	EFT	OTO	SDTO	ISTO	OSTO
<b>Alcohol</b>						
No	70	11.50±3.00	4.64±1.69	4.85±1.51	5.71±1.89	3.50±0.75
Yes	85	12.82±3.59	4.70±2.17	5.1 ±1.93	5.41±2.09	4.05±1.24
t		-1.09	-0.089	-0.411	0.417	1.46
Sig (2 tailed)		0.282	0.930	0.684	0.679	0.154
<b>Drugs</b>						
No		12.10±3.14	3.50±1.84	4.60±1.57	5.50±2.01	4.00±0.94
Yes	50	12.28±3.52	5.23±1.75	5.19±1.80	5.57±2.01	3.71±1.14
t	105	-0.142	-2.53	-0.884	-0.092	0.684
Sig (2 tailed)		0.888	0.017*	0.384	0.927	0.499
<b>Smoking</b>						
No		12.20±3.29	4.52±2.02	5.00±1.82	5.36±1.95	3.80±1.04
Yes	125	12.33±3.93	5.33±1.50	5.00±1.41	6.33±2.06	3.83±1.32
t	30	-0.086	-0.920	0.000	-1.08	-0.06
Sig (2 tailed)		0.932	0.365	1.00	0.28	0.947
<b>Physical activity</b>						
Light		12.85±3.84	5.14±1.77	5.00±1.29	5.16±1.78	3.75±0.89
Moderate to active	35	12.04±3.26	4.54±1.99	5.00±1.86	6.85±2.19	4.00±1.63
t	120	0.560	0.716	0.000	-2.09	-0.534
Sig (2 tailed)		0.580	0.480	1.00	0.045*	0.598
<b>BMI</b>						
Normal		12.91±3.98	4.33±2.22	4.75±2.05	5.66±2.38	3.66±1.43
Obese	60	11.78±2.91	4.89±1.76	5.15±1.53	5.47±1.74	3.89±0.809
t	95	0.909	-0.780	-0.632	0.260	-0.567
Sig (2 tailed)		0.371	0.442	0.532	0.797	0.575

(\*p&lt;0.05-significant)

**Table 3: Association of different Psychological variables with five domains of International index of Erectile function using Independent sample t test.**

Psychological variables	International Index of Erectile function (IIEF) (Mean ± SD)					
	No	EFT	OTO	SDTO	ISTO	OSTO
<b>Pt 1</b>						
2	75	13.36±3.69	5.46±1.76	5.60±1.68	6.66±2.16	4.06±1.27
t	80	11.25±2.76	3.93±1.84	4.43±1.63	4.50±1.03	3.87±1.14
Sig (2 tailed)		1.72	2.35	1.95	3.60	0.440
		0.095	0.026*	0.061	0.001*	0.665
<b>SST 1</b>						
2	75	13.40±3.24	5.46±1.99	5.80±1.61	6.46±2.23	4.20±1.32
t	80	11.12±3.15	3.93±1.61	4.25±1.52	4.68±1.25	3.75±1.06
Sig (2 tailed)		1.97	2.35	2.74	2.76	1.04
		0.058	0.026*	0.010*	0.010*	0.303
<b>ET 1</b>						
2	65	13.69±3.32	5.23±2.20	5.92±1.75	6.84±2.19	4.23±1.36
t	90	11.16±3.03	4.27±1.67	4.33±1.41	4.61±1.14	3.77±1.06
Sig (2 tailed)		2.19	1.37	2.79	3.69	1.04
		0.036*	0.181	0.009*	0.001*	0.306

(\*p&lt;0.05-significant)

## DISCUSSION

A total of 155 cases were registered in 3 months period, mostly young and middle aged males reported for

treatment (38.7% in the age group of 30-34 years and 29.08% in the age group of 35-39 years). Earlier studies, which although give an evidence of association of age with erectile dysfunction (ED) yet they have recorded

the prevalence of ED in older adults aged 40 years and above.<sup>19-21</sup> Prevalence of ED in few cases of younger age group between 20-40 years have also been reported in the literature.<sup>22-24</sup> Influx of young healthy patients reporting for consultation may be because of increased awareness or due to non-inclusion of young patients in the sample studied by previous authors. Erectile dysfunction in young healthy men is an increasingly common chief complaint seen in urology clinics across the world.<sup>25,26</sup> MariIda et al and Christensen BS et al have concluded in

their study that lifestyle factors affect ED.<sup>27,28</sup> Role of obesity and sedentary lifestyle in relation to ED has been confirmed in number of studies.<sup>29-31</sup> In the present study the difference in mean score of erectile dysfunction among different categories of physical activity and BMI failed to achieve statistical significance except in the domain of intercourse satisfaction ( $p=0.045$ ) where those with light activity showed more severe ED. Also, light activity was significantly associated ( $p=0.038$ ) with erectile performance anxiety.

**Table 4: Association of different life style variables with Erectile Performance Anxiety Index(EPAI) using Independent sample t test.**

Life style variables	No	Erectile Performance Anxiety Index(EPAI)		
		Mean±SD	t	Sig
<b>Alcohol</b>				
No	70	39.71±3.66	-0.658	0.515
Yes	85	40.64±4.12		
<b>Drugs</b>				
No	50	41.00±3.39	0.760	0.454
Yes	105	39.85±4.12		
<b>Smoking</b>				
No	125	37.83±3.92	-1.73	0.09
Yes	30	40.80±3.73		
<b>Physical activity</b>				
light	35	41.00±3.68	2.17	0.038*
Moderate to active	120	37.57±3.59		
<b>BMI</b>				
Normal	60	39.75± 3.79	-0.535	0.597
Obese	95	40.52±4.01		

(\* $p<0.05$ -significant).

History of smoking showed no positive association with ED in the present study, some studies are in favour of our findings and some contrary to it.<sup>21,29,30,32-36</sup> Earlier studies have shown that alcohol consumption may not be predictive of ED in men with moderate or low level of alcohol consumption.<sup>31,35</sup> The findings are in line with the results of our study where all the patients who gave history of alcohol consumption consumed it in mild to moderate quantity. Bacon CG et al have concluded that moderate alcohol consumption may exert a protective effect on ED in both the general population and in diabetic men.<sup>29</sup> The lifestyle factors may not have an important role as discussed in the study, FG Martins also states that conditions typically associated with ED may not be found in younger men.<sup>37</sup> Psychogenic ED is defined as persistent disability to achieve or maintain an erection satisfactory for sexual performance owing predominantly or exclusively to psychological or interpersonal factors.<sup>38</sup> The erectile performance anxiety index score was higher in case of those with more severe ED. Several investigators and clinicians have described how role of anxiety in initiating or maintaining sexual arousal difficulties are frequently mediated by

cognition.<sup>38,39</sup> The patients of ED may present with a variety of psychopathological states (stress, phobias, personality disorders, fragile self-esteem, anxiety).<sup>40,41</sup>

The present study also shows a positive association of severe erectile dysfunction with perceived stress and low self-esteem. In younger men, stressful events related to job and marriage may act as triggering factors for anxiety, stress and low self-esteem and need to be evaluated and managed for effective management of ED.

#### Limitations

The results of the study cannot be generalised to the wider community as majority of the study subjects belonged to younger and middle age groups.

#### Relevance

The study would sensitize the Medical practitioners dealing with young patients of ED to give stress to managing psychological factors along with other variables.



## CONCLUSION

The patients reporting for treatment in the present study belonged to younger and middle age groups. The already documented, associated factors of ED (e.g. aging, several co morbidities or lifestyle factors) were not present considerably among them. However, psychological factors showed a statistically significant association with different domains of ED.

## Recommendations

ED, which has been mostly seen as a disorder of elderly men, may be showing a demographic transition with young population being involved increasingly or may be more of young and middle aged men are shedding the inhibitions and coming forward for medical interventions. There is an urgent need for reorientation of medical practitioners towards the role of psychological factors through short term workshops or CMEs.

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