

Prevalence of Self-Reported Erectile Dysfunction Among Urological Cases in Turkish Men

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Purpose: To determine the prevalence of self-reported erectile dysfunction (ED) among urological cases in Turkish men.

Materials and Methods: Between January 2007 and January 2011, the diagnoses of 9780 men over 18 years old that presented to our urology polyclinic were reviewed. The 10 diseases with the highest frequency, the rate of the disease, and the intra-group ranking were determined in 18 to 39, ≥ 40 -year-old, and in total. The rate of ED among urological cases was considered to be the self-reported ED prevalence. The findings were evaluated using the population-based (Turkey) ED prevalence found in the literature. Also, the prevalence of benign prostatic hyperplasia (BPH) was evaluated in the Turkish population. This evaluation compared the ED and BPH prevalence.

Results: The prevalence of ED (self-reported ED) was 1.9%, 8.2%, and 4.8% in the age groups of 18 to 39, ≥ 40 years, and total, respectively. The intra-group ranking of ED was 8th, 3rd, and 8th in the aforementioned groups, respectively. The most frequent disease was BPH in total and ≥ 40 -year-old groups. The ratio of patients with BPH to ED was 6.1 (BPH/ED: 2250/366). The prevalence of ED (self-reported ED) as well as BPH significantly increased with age ($P < .001$ and $P < .001$, respectively).

Conclusion: The prevalence of ED in urological cases is relatively lower than expected. There is a discrepancy between the self-reported ED prevalence in urological cases and population-based ED prevalence.

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INTRODUCTION

Erectile dysfunction (ED) is defined as the inability to attain or maintain the penile erection required for sufficient sexual performance for at least 6 months.⁽¹⁾ Erectile dysfunction is a multi-factorial disease; the vascular, neurogenic, hormonal, psychogenic, cavernosal, iatrogenic, and anatomic causes lie in its pathophysiology.⁽²⁾

In the world database, the reported ED prevalence for different countries varies between 3% and

71% according to the age.⁽³⁻¹⁰⁾ There are many factors that affect ED prevalence. Poor health in general is likely to concur with a low level of sexual desire or interest and with ED. Increased physical activity is associated with a lower risk of ED. Erectile dysfunction may be more prevalent in Hispanic men after controlling for other factors, and the prevalence of ED increases with age even when controlling for other diseases.⁽³⁾

Hormonal and endocrine disorders,

diabetes mellitus, cardiovascular disease, hypertension, and psychiatric diseases are clearly associated with ED and other sexual disorders in men. Medication and recreational drugs are also associated with male sexual disorders, particularly disorders that are associated with use of neuroleptics.⁽³⁻¹⁶⁾

New epidemiological studies show an increase in the prevalence rates for ED in men who smoke as a standalone risk.^(2,3) Recent literature on obesity and metabolic syndromes shows a clear association with the components of diabetes mellitus, hypertension, and hypogonadism.^(3,16) Andersen and colleagues reported that both the reduced time spent in rapid eye movement phase and fragmented sleep were significant risk factors for ED complaints. Also, obesity, low testosterone levels, poor quality of life, apnea-hypopnea, and obstructive sleep apnea syndrome were significantly associated with a higher risk of ED complaints.⁽⁵⁾

Some urological diseases, including lower urinary tract symptoms (LUTS) and chronic prostatitis, are also associated with ED.^(3,17-20) In a review of 20 studies in urology clinics, Bouwman and associates reported that many studies have shown a significant positive correlation between LUTS and ED.⁽¹⁷⁾ Surgery in the pelvic region and trauma to this area damage vital neurological and vascular pathways that are necessary for erection and, therefore, serve as risk factors for ED.⁽³⁾

There have been some epidemiological studies in Turkey and neighboring countries. A population-based study in Turkey reported that the prevalence of ED in Turkish men was 69.2%.⁽¹⁰⁾ Bal and coworkers reported that ED prevalence was 79% in urological cases with metabolic syndrome in Turkey.⁽¹⁶⁾ In the west-neighboring country of Greece, Doumas and colleagues reported that ED prevalence was 35.2% in patients with essential hypertension and 14.1% in normotensive patients.⁽¹³⁾ In the east-neighboring country of Georgia, Hebert and associates reported that the prevalence of ED was 61.7% in patients with systolic heart failure (ejection fraction \leq 40% by echocardiogram).⁽¹⁵⁾ In another east-neighboring country, Iran, Mehraban and coworkers reported that ED prevalence was

68.2% in Iranian men with LUTS.⁽¹⁹⁾

The prevalence rates vary considerably because of the study design, the different ages reported, the different age compositions of the studies, the different percentages of responders, the different time periods asked about, the different definitions of ED used, and the different strategies of data collection (eg, telephone interviews, mailed questionnaires, in-office questionnaires, face-to-face interviews, and single questions versus multiple scales).⁽³⁾

According to these world-wide data, the highest reported population-based ED prevalence was in Turkey. Despite the high ED prevalence in the Turkish population, the prevalence of ED in urological cases is unknown. The aim of this study was to determinate the self-reported ED prevalence in urological cases.

MATERIALS AND METHODS

All procedures and methods of data collection were approved by the local ethics committee before commencement of the study. Between January 2007 and January 2011, the diagnoses of 14 232 patients who presented to the urology polyclinic of our hospital were reviewed.

The scanning of patients' records in the electronic environment was conducted with the help of the Hospital Information Management System (HIMS). The International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) diagnosis codes of 14 232 patients in the HIMS were listed. The ICD-10 code is a standard coding system developed by the World Health Organization for the purpose of collecting epidemiological data. However, these codes are used as diagnosis codes in Turkish medical institutions because the Ministry of Health adapted the ICD-10 coding system into Turkish medical institutions and made its use compulsory since July 2005.

All the women (3780 patients) and men under the age of 18 years (972 patients) were excluded from data analysis. The remaining 9780 men were classified into two groups according to age. The first group included men in the age range of 18 and 39 years and the second group consisted

of patients ≥ 40 years. The frequency of the ICD-10 codes was determined separately for each group and in total. The 10 most frequent diseases for each group were determined, and the diagnoses were ranked in decreasing order. The rate of ED was considered to be the self-reported ED prevalence in urological cases, which was evaluated using the following factors: 1) the population-based ED prevalence (Turkey) in the literature; 2) the self-reported ED prevalence in the literature; and 3) the population-based benign prostatic hyperplasia (BPH) prevalence (Turkey) in the literature, and our findings for BPH prevalence in this study. Data of BPH was evaluated to compare our findings of ED and BPH. Our aim was to compare the number or ratio of patients that referred to urology clinics to the population-based disease prevalence for ED and BPH.

Some interventions that were harmless for the design of the study were made during the listing of the ICD-10 codes. Similar diagnoses were collected with the higher group that included the diagnosis. For example, dysuria (R30.0), vesical tenesmus (R30.1), and painful pissing (R30.9) diagnoses were all regarded as dysuria (R30). In addition, there is only one option (N48.8) in the ICD-10 list for ED diagnosis, and this code only includes impotencies with organic origins. Although there might be different etiological causes for ED, all the patients with ED were given the code N48.8 because there are no other options in the ICD-10 list. Therefore, this coding includes all ED forms within the scope of this study.

Patients in this study were limited to those who presented to the clinic because of ED only; therefore, they were considered as self-reported ED. Even if they had some urological and non-urological diseases, they were seeking the hospital only because of ED. However, patients with ED were not systematically examined in our clinic routinely during the scanned period, not even with a single verbal questionnaire for some patients.

Although not all the patients were examined systematically for ED, the patients with ED in this study were routinely questioned using the International Index of Erectile Function

(IIEF) questionnaire in our clinic, which has been a routine procedure for patients with ED in our clinic since 2005. The IIEF is a 15-item questionnaire that assesses the five domains of sexual function: erectile function (EF) is assessed by the responses to questions 1 to 5 and 15. Erectile dysfunction was classified using the IIEF-EF domain score with mild ED characterized by a score of 17 to 25, moderate ED by a score of 11 to 16, and severe ED by a score of 6 to 10.

This study employed a large population-based sample of Istanbul and Turkey because patients were living in Istanbul, and they came from all parts of Turkey. Therefore, the population of Istanbul is a large sample population of Turkey.

Data analyses were performed using Microsoft Excel 2003 and a statistical package software (MedCalc v11.5.1.0 Incl. Keygen CRD). The prevalence of ED and other diseases within the different age groups was calculated as a percentage rate. The comparisons of this rate between the different age groups were performed statistically using the comparison of two rates between two independent groups. *P* values less than .05 were considered significant.

RESULTS

The mean age of the patients was 41.7 ± 12.3 years (range, 18 to 87 years). Of 9780 men, 5438 (55.6%) belonged to the age group of 18 to 39 years and 4428 (45.2%) patients were 40 years old or over.

The prevalence of ED (self-reported ED) was 1.9%, 8.2%, and 4.8% in the age groups of 18 to 39, ≥ 40 years, and total, respectively. The intra-group ranking of ED was 8th, 3rd, and 8th in the aforementioned groups, respectively (Table 1).

The prevalence of BPH was 1.6%, 50.8%, and 23.9% in the 18 to 39, ≥ 40 -year-old, and total groups, respectively. The most frequent disease was BPH in total and ≥ 40 -year-old groups. The ratio of patients with BPH over ED was 6.1 (BPH/ED: 2250/366; Table 1). The prevalence of ED (self-reported ED) as well as BPH significantly increased with age ($P < .001$ and $P < .001$, respectively).

Of the participants, 5141 (52.5%) were married,

Table 1. Prevalence of diseases according to age and intra-group ranking.

ICD-10	Diagnosis	Total (41.7 ± 12.3)			18 to 39 years old (33.2 ± 6.1)			≥ 40 years old (54.1 ± 7.5)		
		N	%	S	N	%	S	N	%	S
N40	Benign prostatic hyperplasia	2340	23.9	1	90	1.6	9	2250	50.8	1
R30	Dysuria	1298	13.2	2	1118	20.5	1	180	4.0	5
N2.0	Kidney Stone	891	9.1	3	441	8.1	6	450	10.1	2
I86.1	Varicocele	887	9.0	4	809	14.8	3	78	1.7	9
N46	Infertility	874	8.9	5	840	15.4	2	34	0.7	10
N20.1	Ureteral Stone	673	6.8	6	475	8.7	4	198	4.4	4
N39	Infection	812	6.2	7	472	8.6	5	140	3.1	6
N84.4	Impotence	476	4.8	8	106	1.9	8	366	8.2	3
N23	Renal colic	312	3.1	9	186	3.4	7	126	2.8	7
N43	Hydrocele	73	0.7	10	45	0.8	10	118	2.6	8
	Other	1344	13.7		856	15.7		488	11.0	
	Total		9780			5438			4428	

S indicates sequence, intra-group ranking.

4376 (44.7%) unmarried, 134 (1.3%) divorced, and 129 (1.3%) unmarried and cohabitating. Of 476 patients with ED, 443 (93%) were married, 23 (4.8%) unmarried, 19 (3.9%) divorced, and 7 (1.4%) unmarried and cohabitating.

The patients had some diseases or comorbidities, including diabetes mellitus, hypertension, coronary artery disease, cardiac disease, various endocrine diseases, anemia, and gastrointestinal diseases with the prevalence of 11.7%, 14.3%, 6.1%, 6.9%, 7.3%, and 9.3%, respectively. While 54%, 45.3%, 10.9%, 7.7%, 6.5%, and 5.6% of patients with ED suffer from aforementioned conditions, respectively. We could not detect other risk factors or comorbidities, such as cigarette smoking, obesity, apnea-hypopnea, because the study was retrospective.

Of the 476 patients with ED, 318 (66.8%) had severe, 119 (25%) had moderate, and 39 (8.1%) had mild ED. Also, 223 (46.8%) patients had LUTS, 57 (11.9%) had premature ejaculation, 54 (11.3%) had chronic prostatitis, and 15 (3.1%) had ejaculatory dysfunction.

DISCUSSION

Erectile dysfunction is the most frequently encountered form of sexual dysfunction in elderly men and reduces the quality of life.⁽²¹⁾ Epidemiological studies indicate that ED is a widespread public health concern that affects millions of men around the world. Over 140 million men in the world have ED, and it is

expected that approximately 200 million men in Asia-Pacific countries and approximately 300 million men in the world will suffer from ED by the year 2025.⁽²²⁾

Millions of men suffer from ED in different countries, including Turkey. The ED prevalence reported for Turkey, the USA, the UK, Australia, Japan, and Korea are 69.2%, 52%, 32%, 43%, 26%, and 37%, respectively.^(10,23-25)

In Asian countries, self-reported ED varies from 3.0% to 71%.^(3,17) Khoo and colleagues reported that self-reported ED prevalence is 70.1%, including 32.8% mild, 17.7% mild to moderate, 5.1% moderate, and 14.5% severe ED in Malaysia.⁽²⁶⁾ Hao and associates reported that the self-reported ED prevalence is 12% in total and 13.8% in ≥ 40-year-old group in China. They also reported that the prevalence of ED among men with chronic prostatitis is 40.5% in total. They rightfully discussed that the differing prevalence of self-reported ED could be attributed to the different populations that were surveyed and other confounding factors, such as the number of participants, the presence of comorbidities, differences in help-seeking behavior, the use of diverse survey methodologies, questionnaires, and different risk factors depending on the age and local area.⁽¹⁸⁾

Lewis assessed the reports of nine epidemiological studies on sexual dysfunction published in English that involved Asian countries and compared these reports to the rest of the world. He reported that

the prevalence rate of ED increased with each decade of life in all studies.⁽³⁾ Asian studies showed a 7% to 15% rate of ED for ages 40 to 49 years and 39% to 49% for ages 60 to 70 years. Similarly, Australian studies showed the prevalence of 5% to 6% for ages 40 to 49 years and 12% to 13% for ages 50 to 59 years for ED. Europeans were hard to compare, but roughly, lower values for the total groups were reported: 3% to 5% for men less than 49 years of age with the widest difference of rates in men aged 50 to 59 years. After 60 to 65 years of age, ED increased to double-digit percentages, and at the age of 70 years and above, it increased to 40% to 50% of the population sampled. Latin American reports have varied as well, and by the age of 60 years, the prevalence rate of ED increases to 40% to 50%. North American studies have similar marked increases at the age of 60 years. World studies have shown a trend of higher rates of ED in the USA and Asia compared to other regions of the world.⁽³⁾

In our study, the self-reported ED prevalence among urological cases was 4.8% in total and 8.2% in men \geq 40 years old. These ED prevalences are lower than the results of some studies in the literature. Especially, according to the high population-based ED prevalence in Turkish men (69.2%),⁽¹⁰⁾ the ED prevalence among urological cases should have been higher than our findings.

Self-reported ED prevalence in our study is not the real population-based ED prevalence. Our data is the number or rate of patients with ED who referred to the urology clinics seeking treatment. However, it may be expected that the self-reported ED prevalence is correlated with the population-based ED prevalence. We observed that Turkish men suffering from ED referred to the urology clinics at a lower rate than some of the western countries in Europe. For example, in a study by the French Urology Association partnered with 150 urology clinics, Droupy and colleagues reported that male sexual dysfunction, including ED, was the second reason for visiting urologists (14%), following prostatic diseases (62%). This study used a sample that was representative of urology patients in France regarding age, geographical distribution, and the practice of men over 18 years old visiting

a urologist to estimate the prevalence of male sexual dysfunction, including ED, and described treatment options. Among these patients, 68% had ED (44% severe) and 25% were treated.⁽²⁷⁾

In our study, the most frequent disease was BPH, which is similar to the study by Droupy and associates, but male sexual dysfunction, including ED, was not the first reason for visiting the urologist; rather, it was only eighth. We observed a discrepancy between the high prevalence of ED (population-based) and the low rate of patients consulting for this condition (self-reported ED) in our study.

Nevertheless, Droupy and coworkers conclusively commented that “despite declared urologists’ interest in male sexual dysfunction, the discrepancy between the high prevalence of ED and the low rate of patients consulting for this condition probably explains the low rate of patients using treatments.” However, about 60% of these patients had already talked about their ED to a physician, who was a urologist in 44.6% of cases. The perspective of living the rest of their lives with this trouble was “unacceptable” for 21.1% of patients with ED and “fairly acceptable” for 34.4%.⁽²⁷⁾

In our study, 66.5%, 25%, and 8.1% of patients had severe, moderate, and mild ED, respectively, but 44% of patients with ED in the study by Droupy and colleagues had severe ED. Therefore, it may be that only Turkish men who are suffering from severe ED visit the urology clinics in Turkey. The majority of Turkish patients with ED who have mild to moderate ED do not visit the urologists or urology clinics.

In another study in Germany, Hoessl and associates reported that office-based urologists were aware of ED in 37.3% of the 8768 patients who presented with LUTS before the study, and 14.7% of patients were treated for ED. The aim of their study was to determine the prevalence of ED in patients who visited office-based urologists in Germany because of LUTS due to BPH and to evaluate the impact of ED on the quality of life in these patients. After the study-related assessment, physicians diagnosed ED in 62.1% of these patients and planned treatment in

46.9%. The severity of LUTS and ED prevalence correlated significantly after age stratification, and the incidence of ED increased in patients with established ED risk factors.⁽²⁰⁾

According to the literature, the population-based prevalence of BPH,⁽²⁸⁾ the prevalence of ED,⁽¹⁰⁾ and the prevalence of moderate to severe ED are 34.9%, 69.2%, and 36%, respectively, in the Turkish population among men \geq 40 years old. According to 2011 data, the total male population in Turkey is approximately 36 million, and there are 12 million men over 40 years. In this case, there are approximately 10 million Turkish men who suffer from ED and approximately 5 million who suffer from moderate to severe ED. There are approximately 5 million Turkish men with BPH. Therefore, subjects with BPH and cases with moderate to severe ED are approximately equal to each other, and each number is around 5 million.

In our study, the prevalence of BPH was 50.8%, but the prevalence of ED was 8.2% in men \geq 40 years old. Although the ratio of prevalence in our findings to the population-based prevalence was 1.45 for BPH (50.8/34.9), the same ratio was much lower (only 0.11) for ED (8.2/69.2). Therefore, the ratio of BPH to ED was 6.1. These results suggest that the Turkish men suffering from ED visited urology clinics about 6 times less than subjects with BPH (Table 2).

These results suggest that subjects with BPH visited urology clinics in parallel with prevalence of the disease, but this is not the case for Turkish patients with ED. The prevalence of ED and BPH in the general population of Turkey correlated with the literature. Also, the prevalence of BPH in our study among urology patients correlated with literature. But this was not the same for

ED. The prevalence of ED in our study did not correlate with literature. However, the self-reported ED prevalence was lower than expected and was not parallel with similar studies in the literature. The reason for this difference may be because of the behavioral characteristics of Turkish men suffering from ED, who may visit urologists at a relatively lower rate than other urological cases.

In a retrospective study in Turkey, Karakose and associates investigated the rate of andrological cases in general urology practice in all urological cases, including female patients, and found similar results. They reported that patients with BPH ranked 1st with a 39.9% rate, and ED ranked 13th with a 1.1% rate.⁽²⁹⁾ In our study, subjects with ED ranked 8th with a 4.8% rate. This difference might be due to multi-factorial causes, such as differences in patient population and study design. However, these results confirmed our findings and showed that, in all cases, patients with ED are lower than expected among urology patients in Turkey.

The main problem for measuring ED rates in Turkish men suffering from ED is the relatively lower rate of visits to urology clinics. Since the majority of patients with mild to moderate ED do not visit urologists. This condition may be caused by the behavioral characteristics of Turkish men according to some socio-cultural factors. However, in another study, we observed that only 4.2% of Turkish patients with ED who had been followed up for some diseases in the internal medicine department had consulted a urologist for ED. Of these patients, 95.7% had not consulted a urologist for ED (40.1% mild, 28.8% moderate, and 30.9% severe ED). Patients described the reasons for their failure to visit a urologist for ED treatment as follows: 16.6% embarrassment, 13.1% herbal product use, 10.9% considering the problem normal due to aging, 10.8% not finding time because of other chronic diseases, 8.9% oral drug use without physician recommendation, 8.3% not minding the problem, 7.0% supposing that there was not a treatment, 6.4% not being aware of the problem, 5.4% not knowing which doctor to go to, 4.8% not accepting it as a disease or supposing it transient, 2.8% applying to other

Table 2. The ratio of prevalence in our findings to the population-based prevalence

	Prevalence (a)	Prevalence (b)	a/b
Benign prostatic hyperplasia	50.8%	34.9%	1.45
Erectile dysfunction	8.2%	69.2%	0.11

(a) : The prevalence rate in our study in patients \geq 40 years old.

(b) : Population-based prevalence (Turkey) of disease in patients \geq 40 years old in the literature.

clinics (psychiatry, etc), and 5.1% not reporting a reason. Therefore, the majority of Turkish men suffering from ED sought help alone without any consultation with a urologist. The prevalence of these conditions was higher in patients with lower education.⁽³⁰⁾

We considered the use of some herbal products and medications without physician recommendation as important causes. The rate of use of an oral phosphodiesterase-5 inhibitor without physician recommendation was 26.4% in Turkish patients with ED who had not consulted a urologist.⁽³⁰⁾ Unfortunately, these medications can be used without physician prescription because there are no legal obstacles for their use in Turkey.

The low help seeking rates for Turkish men suffering from ED might also be due to the fact that ED is not a terminal disease. Although it reduces the quality of life, it does not restrict daily activities. Low educational levels and ignorance of ED may be other main factors. Therefore, the professional urology and andrology societies must inform the population by organizing educational activities regarding ED. The population must be told that ED is primarily a uroandrogical disease, and the societal level of knowledge and awareness must be raised on this issue because a significant portion of Turkish men suffering from ED are acting on primarily erroneous information. This condition is mostly seen in patients with lower levels of education. These erroneous behaviors of Turkish men must be prevented.

There were some limitations in our study. The most important limitation was that the ICD-10 codes were used for the diagnosis of diseases. The ICD-10 list is advantageous for data collection, but there is only one option for ED diagnosis in the ICD-10 list. Therefore, an etiological classification of ED could not be done. In addition, our study was a single-center study. However, the patients were a population-based sample of Turkey because they were living in Istanbul, which contains a large sample of the Turkish population. Additionally, only self-reported ED prevalence was determined by this study. Further prospective studies are needed to determine the ED prevalence in urological cases

by IIEF questionnaire or other examinations.

CONCLUSION

The prevalence of ED in urological cases is relatively lower than expected. There was a discrepancy between the low self-reported ED prevalence and high population-based ED prevalence in Turkish men. These findings suggest that more prospective research is needed to evaluate the prevalence of ED.

CONFLICT OF INTEREST

None declared.

REFERENCES

1. Feldman HA, Goldstein I, Hatzichristou DG, Krane RJ, McKinlay JB. Impotence and its medical and psychosocial correlates: results of the Massachusetts Male Aging Study. *J Urol*. 1994;151:54-61.
2. Chew KK, Bremner A, Stuckey B, Earle C, Jamrozik K. Is the relationship between cigarette smoking and male erectile dysfunction independent of cardiovascular disease? Findings from a population-based cross-sectional study. *J Sex Med*. 2009;6:222-31.
3. Lewis RW. Epidemiology of sexual dysfunction in Asia compared to the rest of the world. *Asian J Androl*. 2011;13:152-8.
4. Selvin E, Burnett AL, Platz EA. Prevalence and risk factors for erectile dysfunction in the US. *Am J Med*. 2007;120:151-7.
5. Andersen ML, Santos-Silva R, Bittencourt LR, Tufik S. Prevalence of erectile dysfunction complaints associated with sleep disturbances in Sao Paulo, Brazil: a population-based survey. *Sleep Med*. 2010;11:1019-24.
6. Giuliano F, Chevret-Measson M, Tsatsaris A, Reitz C, Murino M, Thonneau P. Prevalence of erectile dysfunction in France: results of an epidemiological survey of a representative sample of 1004 men. *Eur Urol*. 2002;42:382-9.
7. Moreira ED, Jr., Lbo CF, Diamant A, Nicolosi A, Glasser DB. Incidence of erectile dysfunction in men 40 to 69 years old: results from a population-based cohort study in Brazil. *Urology*. 2003;61:431-6.
8. Nicolosi A, Moreira ED, Jr., Shirai M, Bin Mohd Tambi MI, Glasser DB. Epidemiology of erectile dysfunction in four countries: cross-national study of the prevalence and correlates of erectile dysfunction. *Urology*. 2003;61:201-6.
9. Teles AG, Carreira M, Alarcao V, et al. Prevalence, severity, and risk factors for erectile dysfunction in a representative sample of 3,548 portuguese men aged 40 to 69 years attending primary healthcare centers: results of the Portuguese erectile dysfunction study. *J Sex Med*. 2008;5:1317-24.

10. Akkus E, Kadioglu A, Esen A, et al. Prevalence and correlates of erectile dysfunction in Turkey: a population-based study. *Eur Urol.* 2002;41:298-304.
11. Kendirci M, Trost L, Sikka SC, Hellstrom WJ. The effect of vascular risk factors on penile vascular status in men with erectile dysfunction. *J Urol.* 2007;178:2516-20; discussion 20.
12. Blumentals WA, Gomez-Camirero A, Joo S, Vannappagari V. Should erectile dysfunction be considered as a marker for acute myocardial infarction? Results from a retrospective cohort study. *Int J Impot Res.* 2004;16:350-3.
13. Doumas M, Tsakiris A, Douma S, et al. Factors affecting the increased prevalence of erectile dysfunction in Greek hypertensive compared with normotensive subjects. *J Androl.* 2006;27:469-77.
14. Malavige LS, Levy JC. Erectile dysfunction in diabetes mellitus. *J Sex Med.* 2009;6:1232-47.
15. Hebert K, Anand J, Trahan P, et al. Prevalence of erectile dysfunction in systolic heart failure patients in a developing country: Tbilisi, Georgia, Eastern Europe. *J Sex Med.* 2010;7:3991-6.
16. Bal K, Oder M, Sahin AS, et al. Prevalence of metabolic syndrome and its association with erectile dysfunction among urologic patients: metabolic backgrounds of erectile dysfunction. *Urology.* 2007;69:356-60.
17. Bouwman, II, Van Der Heide WK, Van Der Meer K, Nijman R. Correlations between lower urinary tract symptoms, erectile dysfunction, and cardiovascular diseases: are there differences between male populations from primary healthcare and urology clinics? A review of the current knowledge. *Eur J Gen Pract.* 2009;15:128-35.
18. Hao ZY, Li HJ, Wang ZP, et al. The prevalence of erectile dysfunction and its relation to chronic prostatitis in chinese men. *J Androl.* 2011;32:496-501.
19. Mehraban D, Naderi GH, Yahyazadeh SR, Amirchaghmaghi M. Sexual dysfunction in aging men with lower urinary tract symptoms. *Urol J.* 2008;5:260-4.
20. Hoesl CE, Woll EM, Burkart M, Altwein JE. Erectile dysfunction (ED) is prevalent, bothersome and underdiagnosed in patients consulting urologists for benign prostatic syndrome (BPS). *Eur Urol.* 2005;47:511-7.
21. Sanchez-Cruz JJ, Cabrera-Leon A, Martin-Morales A, Fernandez A, Burgos R, Rejas J. Male erectile dysfunction and health-related quality of life. *Eur Urol.* 2003;44:245-53.
22. Ayta IA, McKinlay JB, Krane RJ. The likely worldwide increase in erectile dysfunction between 1995 and 2025 and some possible policy consequences. *BJU Int.* 1999;84:50-6.
23. Cho BL, Kim YS, Choi YS, et al. Prevalence and risk factors for erectile dysfunction in primary care: results of a Korean study. *Int J Impot Res.* 2003;15:323-8.
24. McKinlay JB. The worldwide prevalence and epidemiology of erectile dysfunction. *Int J Impot Res.* 2000;12 Suppl 4:S6-S11.
25. Wong SY, Leung JC, Woo J. Sexual activity, erectile dysfunction and their correlates among 1,566 older Chinese men in Southern China. *J Sex Med.* 2009;6:74-80.
26. Khoo EM, Tan HM, Low WY. Erectile dysfunction and comorbidities in aging men: an urban cross-sectional study in Malaysia. *J Sex Med.* 2008;5:2925-34.
27. Droupy S, Giuliano F, Cuzin B, Costa P, Vicaut E, Levrat F. [Prevalence of erectile dysfunction in patients consulting urological clinics: the ENJEU survey (one day national survey on prevalence of male sexual dysfunction among men consulting urologists)]. *Prog Urol.* 2009;19:830-8.
28. Uluocak N, Sanli O, Gul H, et al. A population based epidemiological study on benign prostatic obstruction in a suburban district of Istanbul. *Turkish J Urol.* 2009;35:170-9.
29. Karakose A, Alp T, Guner ND, Citlak MB, Aydin S. The place of andrological cases in our general urology practice. *Turkish J Urol.* 2010;36:49-54.
30. Bayraktar Z, Atun I. The rate of use of phosphodiesterase-5 (PDE5) inhibitor without physician recommendation and the faults of using medication in patients with erectile dysfunction. *New J Urol.* 2011;6:26-31.