DOI: 10.4081/aiua.2017.1.

ORIGINAL PAPER

Urinary symptoms and sexual dysfunction among Italian men: The results of the #Controllati survey

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Summary *Objective: Prevention may improve the quality of life and sexual and reproductive health. To improve prevention require a comprehensive research approach that examines the frequency and risk factors for urologic conditions. In June 2016 the Italian Urologic Society coordinated a preventive initiative : the 1st Week of Male Urologic Prevention "#Controllati".*

Material and Methods: During the 1st Week of Male Urologic Prevention "#Controllati", men aged 18 years or more were invited to attend participating urologic centers for a free of charge visit for counseling about urologic or andrologic conditions. Each participating man underwent a physical examination. Further he was asked about his a medical history and about his urologic symptoms, sexual activity and possible related problems.

Results: Data were collected in 81 centers: 2380 men answered the questionnaire. A total of 1226 subjects participating in the study reported one or more urinary symptom [51.5% (IC 95% 48.9%-54.5%)]. The risk of any urinary symptoms increased with age: in comparison with men aged < = 30 years or less the risk of any urinary symptoms was 2.31, 2.92, 5.12, 7.82 and 17.02 respectively in the class age 31-40, 41-50, 51-60, 61-70 and > = 71. Overweight/obese men were at increased risk of any urinary symptoms [OR1.35 (95% CI 1.12-1.64)]. 27.2% (IC 95% overall 25.2% -29.3%) of the subjects had at least a sexual disorder (erectile dysfunction, premature ejaculation, hypoactive sexual desire). The erectile dysfunction and hypoactive sexual desire increased with age, but premature ejaculation tended to be higher among younger aged men aged 40 years or more. Current any urinary symptoms [OR 1.85 (CI 1.40-2.43)], hypertension [OR 1.66 (95% CI 1.21-2.26) and diabetes (OR 2.37 (95% CI 1.45-3.88)] increased the risk of erectile dysfunction.

Conclusions: This large survey gives a picture of the burden of the more frequent urologic conditions offering useful information in order to focus preventive campaign.

KEY WORDS: *Risk factors; Urinary symptoms; Erectile dysfunction; Premature ejaculation.*

Submitted 16 March 2017; Accepted 21 March 2017

INTRODUCTION

Urologic diseases are common among men, leading to significant economic, quality of life and public health issues (1). For example, the reported prevalence of lower urinary tract symptoms (LUTS) is about 50% (2) and of erectile dysfunction 12% (3).

Among Italian men, the lifelong risk of urologic cancer (prostatic bladder and kidney cancer) is about one out of ten (4). The burden of urologic diseases in men will increase as the population ages, and risk factors for LUTS, including diabetes and obesity, remain highly prevalent (5). Adequate prevention, especially in the field of urology, made in young, adult and advanced age, significantly reduces the frequency of cancer (prostate, kidney, bladder and testicle), allowing also an early diagnosis and timely treatment, and benign disease (urolithiasis, benign prostate hyperplasia and prostatitis, male infertility and sexual dysfunction), that can determine, if neglected, a reduction in the quality of life, and sexual and reproductive health damage.

Otherwise, to improve prevention requires a comprehensive research approach that examines the frequency and risk factors for urologic conditions.

In June 2016 the *Italian Urologic Society* (SIU) coordinated a huge preventive initiative: the *1st Week of Male Urologic Prevention "#Controllati"*. In this paper, we present the results of the initiative, with a special focus on LUTS and sexual dysfunction.

METHODS

During the *1st Week of Male Urologic Prevention "#Controllati"* (June 2016), men aged 18 years or more were invited to attend participating urologic centers for a free of charge visit for counselling about urologic or andrologic conditions. A pamphlet inviting men for a free of charge check-up and listing participating centers was left in chemists and general practitioners' waiting rooms and

No conflict of interest declared.

included in two weekly national journals; an advertising campaign was set in the press and broadcast media.
Each participating man underwent a physical examination. Further he was asked about his a medical history and about his urologic symptoms, sexual activity and possible related problems. Data were recorded with a simple questionnaire used by all centers.
The first section, about age, marital, educational and professional status, weight, height, family history of prostatic cancer was completed by the patient. History of hypertension, diabetes and other medical conditions, and the findings of the clinical examination, were recorded by the physician. Erectile function was assessed by asking men about their sexual performance: *erectile dysfunction* (ED) was diagnosed according to the definition of the *NIH Consensus Development Panel* (6), when a man was consistently unable to attain or maintain a penile erection sufficient for satisfactory sexual performance.
A man was diagnosed as suffering from premature ejaculation (PE) if he had "*persistent or recurrent ejaculation with minima sexual stimulation before, or shortly after penetration, and before the person wishes*" according to the categorization of the *American Psychiatric Association*.
Patients were directly asked about the presence of this disorder during the visit.
The 2002 ICS definitions were used for frequency, nocturia, urgency, dysuria (intermittency, slow stream, straining, terminal dribble, postmicturition dribble) incomplete emptying (7). A total of 181 centres participate to the initiative, 70 in the North, 45 in the center and 66 in the *South of Italy*. However, epidemiological data were collected in 81 centers for a total of 2380 men who filled the questionnaire [mean number for center 29 (SD 21), median 25 (interquartile range 24-40)].
Mean (standard deviation, SD), median (range) or frequency (percent, %) were computed as appropriate. Were also calculated where appropriate confidence limits at 95% of the proportions.
Finally, we ran an analysis on the risk factors for sexual dysfunction (separately for ED and PE) and urinary disorders. Odds ratios (OR), and the corresponding 95% confidence intervals (CI), were derived using unconditional multiple logistic regression, fitted by the method of maximum likelihood, in which the dependent variable was the presence (case) or absence (control) of the condition and the independent ones were the exposures considered in the analysis. We included in the model potential co-variates considered as categorical variables (8). The terms included in the model are indicated in the footnotes of the Tables.

Results

The general characteristics of study subjects are shown in Table 1: the mean age was 53.6 years (DS 11.5, median age 53 years, range 18-87). The most frequent class age was 41 to 50 years (31.09%).
The mean body mass index (BMI) was 26.0 (DS 3.6) and the median 25.5.
Most participants were ever married (70.1%).
The 13.2% of subjects reported a diagnosis of hypertension and 3.7% of diabetes. A family history of prostatic cancer was reported in 9.8% of subjects.

Frequency of PSA test screening and semen analysis

A total of 1291 men (54.2%, 95% CI 51.3% -57.3%) of the study subjects reported PSA testing. Considering subjects aged 70 years or more, this percentage increased to 84.9% (95% CI 71.9% -99.5%).
Overall, 325 men reported a least one semen analysis in life (13.7%, 95% CI 12.2-15.1%) (Table 2).

Frequency of and risk factors for urinary symptoms

A total of 1226 subjects participating in the study reported one or more urinary symptom (51.5%, CI 95% 48.9%-54.5%). The most commonly reported urinary symptom was nocturia, in age groups 50 or more, whereas in younger age groups frequency was the most reported (Table 3).

Table 1.
Characteristics of study subjects.

	N	%
Age (years)		
≤ 30	60	2.6
31-40	171	7.5
41-50	740	32,3
51-60	679	29.7
61-70	467	20.4
≥ 71	172	7.5
Marital status		
Never married	497	22.6
Married	1668	75.8
Divorced/widower	36	1.6
BMI (kg/m^2)		
< 25.0	877	44.1
25.0 -29.9	886	44.6
≥ 30.0	225	11.3
Hystory of		
Hyperthension (yes)	314	13.2
Diabetes (yes)	87	3.7
Family history of prostatic cancer (yes)	232	9.8

Sometimes, the sums do not add up the total due to missing values

Table 2.
Subjects reporting one or more PSA testing and semen analysis in life in strata of age.

	> = 1 PSA test in life		> = 1 semen analysis in life	
	No* N %	Yes N %	No N %	Yes N %
Age (years)				
≤ 30	58	2	52	8
(No. = 60)	96.7	3.3	86.7	13.3
31-40	158	13	138	33
(No. = 171)	92.4	7.6	80.7	19.3
41-50	508	232	605	135
(No. = 740)	68.7	31.4	81.8	18.2
51-60	211	468	580	99
(No. = 679)	31.1	68.9	85.4	14.6
61-70	84	383	433	34
(No. = 467)	18.0	82.0	92.7	7.3
≥ 71	26	146	164	8
(No. = 172)	15.1	84.9	95.4	4.7
Total	1089	1291	2055	325
No. = 2380	45.8	54.2	86.3	13.7

**Sometimes, the sums do not add up the total due to missing values.*

Table 3.
Frequency of urinary symptoms according to age.

	Nocturia	Dysuria	Incomplete emptying	Urgency	Frequency	Any symptom
	N %	N %	N %	N %	N %	N %
Age (years)						
≤ 30	1	4	1	3	3	9
(No. = 60)	1.7	6.7	1.7	5.0	5.0	15.0
31-40	16	20	13	12	25	53
(No. = 171)	9.4	11.7	7.6	7.0	14.6	31.0
41-50	101	88	85	78	90	282
(No. = 740)	13.7	11.9	11.5	10.5	12.2	38.1
51-60	174	116	139	111	125	378
(No. = 679)	25.6	17.1	20.5	16.4	18.4	55.7
61-70	189	81	119	94	104	317
(No. = 467)	40.5	17.3	25.5	20.1	22.3	67.9
≥ 71	89	46	59	47	51	141
(No. = 172)	51.7	26.7	34.3	27.3	29.7	82.0
Total	587	375	428	350	409	1226
No. = 2380	24.7	15.8	18.1	14.7	17.2	51.5

Sometimes, the sums do not add up the total due to missing values.

We analyzed risk factors for any urinary disorders: the results of the analysis are presented in Table 4. The risk of any urinary symptoms increased with age: in comparison with men aged < = 30 years or less the risk of any urinary symptoms was 2.31, 2.92, 5.12, 7.82 and 17.02 respectively in the age classes 31-40, 41-50, 51-60, 61-70 and > = 71.

Overweight/obese men were at increased risk of any urinary symptoms (OR 1.35, 95% CI 1.12-1.64).

Further, any current sexual dysfunction was associated with an increased risk of any urinary symptoms (OR1.60. 95% CI 1.29-1.98).

Analyzing the association of overweight/obesity and any current sexual dysfunction separately for the various urinary symptoms, we observed similar results.

Frequency and risk factors of sexual dysfunction

Table 5 shows the distribution of study subjects in strata of age according to the presence of sexual dysfunction (erectile dysfunction, premature ejaculation, hypoactive sexual desire).

27.2% (IC 95% overall 25.2% -29.3%) of the subjects had at least a sexual disorder. The rate was 30.0% (CI 95% 18.3% -46.5%) in 30 or less, then slightly decrease in group 31-50 and increased in older age groups, being 41,9% in the men aged > = 71 years.

The erectile dysfunction and hypoactive sexual desire increased with age, but premature ejaculation tended to be higher among younger aged men aged 40 years or more.

11.9%, (44, % 95% CI 8.7% -15.8%) of men reporting erectile dysfunction were currently treated for the condition (data not shown in Table).

We computed risk factors for sexual dysfunction separately for premature ejaculation and erectile dysfunction. The results of the analysis are presented in Table 6.

The OR of premature ejaculation decreased with age being, in comparison with men aged < = 30 years, 0.16 (95% CI 0.05-0.50) in men aged > 70 years.

Table 4.
Odds ratios (and corresponding 95% confidence intervals) of any urinary symptom according to selected factors.

	Any urinary symptoms		
	No N* %	Yes N %	OR (95CI%)
Age (years)			
≤ 30	51	9	
	85.0	15.0	1°
31-40	118	53	
	69.0	31.0	2.31 (1.03-5.19)
41-50	458	282	
	61.9	38.1	2.92 (1.39-6.11)
51-60	301	378	
	44.3	55.7	5.12 (2.44-10.75)
61-70	150	317	
	32.1	67.9	7.82 (3.68-16.74)
≥ 71	31	141	
	18.0	82.0	17.02 (7.36-39.33)
BMI (kg/m^2)			
< 25.0	491	386	
	56.0	44.0	1°
≥ 25.0	475	636	
	42.8	57.3	1.35 (1.12-1.64)
Marital status			
Never married	306	191	
	61.6	38.4	1°
Married	741	927	
	44.4	55.6	1.12 (0.8-1.44)
Divorced/vidower	17	19	
	47.2	52.8	0.80 (0.34-1.89)
Any sexual dysfuncion			
No	916	817	
	52.9	47.1	1°
Yes	238	409	
	36.8	63.2	1.60 (1.29-1.98)

**Sometimes, the sums do not add up the total due to missing values*
°Reference category
OR: odds ratio; CI: confidence interval. Multivariate estimates including terms for the above listed variables.

Table 5.
Frequency of sexual dysfunction according to age.

	Erectile dysfunction	Premature ejaculation	Hypoactive sexual desire	Any sexual dysfunction
	N %	N %	N %	N %
Age (years)				
< =30	6	10	2	18
	10.0	16.7	3.3	30.0
31-40	15	20	7	30
	8.8	11.79	4.1	22.8
41-50	52	55	39	127
	7.0	7.4	5.3	17.2
51-60	107	46	61	184
	15.8	6.8	9.0	27.1
61-70	122	35	49	181
	26.1	7.5	10.5	38.8
> = 71	51	6	19	72
	29.7	3.5	11.2	41.9
Total	370	178	182	647
	15.6	7.5	7.7	27.2

Sometimes, the sums do not add up the total due to missing values.

Table 6.
Odds ratios (and corresponding 95% confidence intervals) of premature ejaculation and erectile dysfunction according to selected factors.

	Premature ejaculation			Erectile dysfunction		
	No N* %	Yes N %	OR (95%CI)	No N %	Yes N %	OR (95%CI)
Age (years)						
<=30	50	10		54	6	
	83.3	16.7	1°	90.0	10.0	1°
31-40	151	20		156	15	
	88.3	11.7	0.42 (0.16-1.08)	91.2	8.8	1.07 (0.33-3.52)
41-50	685	55		688	52	
	92.6	7.4	0.40 (0.18-0.88)	93.0	7.0	0.80 (0.28- 2.34)
51-60	633	46		572	107	
	93.2	6.8	0.34 (0.15-0.76)	84.2	15.8	1.62 (0.56-4.67)
61-70	432	35		345	122	
	92.5	7.5	0.38 (01.7-0.89)	73.9	26.1	2.56 (0.88-7.42)
> = 71	166	6		121	51	
	96.5	3.5	0.16 (0.05-0.50)	70.4	29.7	3.31 (1.10-9.95)
BMI (kg/m^2)						
> = 24.9	806	71		767	110	
	91.9	8.1	1°	87.5	12.5	1°
> = 25.0	1027	84		895	216	
	92.4	7.6	0.96 (0.68-1.95)	80.6	19.4	1.25 (0.96-1.63)
Marital status						
Never married	455	42		443	54	
	91.6	8.5	1°	89.1	10.9	1°
Married	1541	127		1377	291	
	92.4	7.6	1.30 (0.82-1.07)	82.6	17.5	0.84 (0.58-1.21)
Divorced/vidower	32	4	n.d.	26	10	
	100.0	0.0		76.0	24.0	1.71 (0.62-4.77)
Urinary symtoms						
No	1069	85		1041	113	
	92.6	7.4	1°	90.2	9.8	1°
Yes	1133	93		969	257	
	92.4	7.6	1.32 (0.93-1.89)	79.0	21.0	1.85 (1.40-2.43)
Erectile dysfunction						
No	1863	147				
	92.7	7.3	1°	-	-	-
Yes	339	31				
	91.6	8.4	1.42 (0.92-2.21)	-	-	-
Premature ejaculation						
No	-	-	-	1863	339	
				84.6	15.4	1°
Yes	-	-	-	203	279	
				42.1	58.0	1.45 (0.94-2.23)
Hypertension						
No	1909	157		1793	273	
	92.4	7.6	1°	86.8	13.2	1°
Yes	293	21		217	97	
	93.3	6.7	0.88 (0.53-1.49)	69.1	30.9	1.66 (1.21-2.26)
Diabetes						
No	2119	174		1960	333	
	92.4	7.6	1°	85.5	14.5	1°
Yes	83	4		50	37	
	95.4	4.6	0.57 (0.20-1.62)	57.5	42.5	2.37 (1.45-3.88)

**Sometimes, the sums do not add up the total due to missing values*
°Reference category
OR: odds ratio; CI: confidence interval. Multivariate estimates including term for the above listed variables.
Nd. Not determined.

The OR of erectile dysfunction increased with age being, in comparison with men aged < = 30 years, 3.31 (95% CI1, 10-9.95) in men aged > 70 years.
Current any urinary symptoms [OR 1.85 (CI 1.40-2.43)], hypertension [OR 1.66 (95%CI 1,21-2,26)] and diabetes [OR 2.37 (95%CI 1.45-3.88)] increased the risk of erectile dysfunction.

Discussion

Before discussing the results of this survey, potential limitations should be considered.
The major flaw of this study is that the study population were men voluntarily presenting to the participating centers and physicians associated to the *Italian Society of Urology* (SIU).
The participating centers were not randomly identified among all members, so they cannot be considered representative of all Italian centers. However, they were well distributed over the main areas of the country and there were no marked differences in the results among centers in various large Italian areas, giving strong support to the consistency of the general results. Further, the prevalence of hypertension and diabetes and overweight were largely similar to the general Italian population.
For example the percentage of overweight and obese men was largely similar to that of the Italian population (9).
Finally, the participation rate was very high: for example the answers to the questions about sexuality were missing in a few number of men. Along this line, the patients presented voluntarily to the physician, so their answers to sensitive questions about sexual dysfunction should be truthful.
The strengths of the study included the fact that it provides information from a large series of men identified in all parts of Italy.
Despite the limitations, the results of this large survey gives a general picture of the burden of urological conditions in the Italian populations.

Urinary symptoms

First of all In the present study the self reported frequency of most common *low urinary tract symptoms* (LUTS) was about 50%, a proportion largely similar to that reported in the Italian centers of EPIC study. In that study nocturia was the most prevalent LUTS (2).

We confirm these findings. The frequency of urinary symptoms increased markedly with age being about 15% among men aged 30 years or less, but 82% among those aged 71 or more.
This findings is consistent with other epidemiologic studies of LUTS conducted in men, which also showed that the prevalence of all symptoms increased linearly with age (10, 11).
Overweight/obesity increased the risk of urinary symptoms. In particular overweight /obesity increased the risk of urgency. This finding is consistent with data from other populations (12).
Interestingly concurrent sexual dysfunction increased the risk of urinary symptoms.

Sexual dysfunction

This study also give further data on the frequency of the main sexual dysfunctions in the Italian populations.
In the present survey the reported frequency of premature ejaculation was lower than previously reported among Italian men.
For example, the prevalence of premature ejaculation was of about 20% in a large survey of men attending a free andrologic consultation in about 200 Italian medical centers, in the 2001 (13).
This difference may be partly due to the fact that in the 2001 survey the mean age of participants was lower than in the present study. It has been suggested that diabetes decreased the risk of PE.
For example a decreased risk of PE was found in men with treated diabetes (OR 0.6, 95% CI 0.5-0.8) in men attending a free andrologic consultation in 186 Italian medical centers, in the setting of a project focused on andrologic prevention in Italy (13). It is well known that diabetic patients may develop failure of emission, due both to neuropathic changes of the sympathetic fibers innervating the bladder neck and to aperistalsis of the vas deferens (14).
These changes act in opposition to the mechanism of PE, so that it seems diabetes gives a protective effect against such condition In our study the estimated OR od EP was lower than unity in men reporting diabetes, but the finding was not statistically significant, possibly due to the limited number of diabetics.
With regard to erectile dysfunction, the present analysis confirm that ED is a common condition, particularly among older men. The estimated prevalence of the conditions reported in this study is largely consistent with the findings of a population based study conducted in Italy in the late '90 showing a prevalence of ED of about 12% 3. Further this study confirms that diabetes, and hyperthension increased the risk of erectile dysfunction.
A more interesting findings id the opportunity of analyzing in a large data set the association between urinary symptoms and ED. Some recent data have in fact linked ED risk with the presence of LUTS (15). We recorded if men suffered from several urinary symptoms: an association emerged between these symptoms and ED.
Finally, another interesting finding emerging from this survey is the fact that about 85% of subjects aged > 70 year reported on or more PSA test life. This proportion however lowered to less than 70% among men aged 51-60 year. This finding is consistent with that reported in other countries. For example about 60% of US men aged 76 or older with no history of prostate cancer reported having had a PSA test in year before the interview (16). Otherwise semen analysis is uncommonly reported: less than 15% of men reported one or more semen analysis in life.
In conclusion, this large survey gives a picture of the burden of the more frequent urologic conditions offering useful information in order to focus preventive campaign.

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