EJACULATORY DISORDERS

Ejaculatory Dysfunction in Patients Presenting to a Men's Health Clinic: A Retrospective Cohort Study

Check for updates

Alex M. Kasman, MD, MS¹, Hriday P. Bhambhvani, BS¹, and Michael L. Eisenberg, MD^{1,2}

ABSTRACT

Introduction: Prevalence and bother of ejaculatory dysfunction (EjD) has yet to be evaluated in a men's health referral population.

Aim: To evaluate the prevalence and associated risk factors of EjD in men presenting to a men's health clinic.

Methods: A retrospective review examined patients presenting to an outpatient men's health clinic who completed the Sexual Health Inventory for Men and the Male Sexual Health Questionnaire Ejaculatory Dysfunction (MSHQ-EjD) Short Form. Patient factors including demographics, comorbidities, and medication were examined. Descriptive statistics and multivariable logistic regression were used.

Main Outcome Measures: The main outcomes of this study are Sexual Health Inventory for Men and MSHQ-EjD scores.

Results: A total of 63 (24%) of patients presenting to the urology clinic were characterized as having EjD based on questionnaire responses. The mean age for men with EjD was 53.8 years, while those without was 42.6 years (P < .001). Of men with EjD, 74.6% were at least moderately bothered (MSHQ-EjD \geq 3). Men with EjD were more likely to have erectile dysfunction (77.8%) compared with those without (21%, P < .001) as well as a history of a pelvic cancer (20.6% vs 6%, P = .001). On multivariable regression, erectile dysfunction (odds ratio: 15.04, 95% confidence interval: 6.76–35.92, P < .0001) and alpha inhibitor prescription (odds ratio: 6.82, 95% confidence interval: 1.57–30.16, P = .01) were associated with a higher odds of EjD. ED was found to be a mediator of the relationship between EjD and age, as the age association was lost in the ED population on multivariable regression compared with the non-ED population where it remained significant.

Conclusions: EjD is common among patients presenting to a men's health clinic and may present at varying ages, though it is more common in those aged 50 years or older; it is independent of age and race. EjD is associated with erectile dysfunction, pelvic cancer history, and use of alpha inhibitors, presenting a population that could be considered for screening. Kasman AM, Bhambhvani HP, Eisenberg ML. Ejaculatory Dysfunction in Patients Presenting to a Men's Health Clinic: A Retrospective Cohort Study. J Sex Med 2020;8:454–460.

Copyright © 2020, The Authors. Published by Elsevier Inc. on behalf of the International Society for Sexual Medicine. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Key Words: Ejaculatory Dysfunction; Delayed Ejaculation; Erectile Dysfunction; Men's Health

https://doi.org/10.1016/j.esxm.2020.05.002

INTRODUCTION

Ejaculatory dysfunction (EjD), other than premature ejaculatory, are a combination of potentially distressing conditions that include anejaculation, delayed ejaculation (DE), decreased force of ejaculate volume, and decreased perceived ejaculate volume.^{1,2} Premature ejaculation has been well characterized in the literature with regard to prevalence, risk factors, and associated clinical characteristics.³ However, the equivalent data with regard to other EjD are not nearly as robust. As EjD has the potential to cause patients and their partners significant distress and various treatments do exist, these range of conditions warrant significant attention.^{2,4–7}

Prior prevalence estimates and risk factor associations for EjD have been examined in population-based cohorts or in patients

Received March 5, 2020. Accepted May 7, 2020.

¹Department of Urology, Stanford University School of Medicine, Stanford, CA, USA;

²Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, USA

All authors have completed the ICMJE uniform disclosure form at www. icmje.org/coi_disclosure.pdf and declare: no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.

Copyright © 2020, The Authors. Published by Elsevier Inc. on behalf of the International Society for Sexual Medicine. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Table 1. Describe demographics and comorbidities of the patient population	Table [·]	1. Baseline	demographics	and	comorbidities	of	the	patient	pop	ulati	วท
---	--------------------	--------------------	--------------	-----	---------------	----	-----	---------	-----	-------	----

	EjD	No EjD	<i>P</i> -value
Total	63	200	
Age (mean (SD))	53.76 (15.63)	42.60 (14.35)	<.001
<30	5 (11.9)	37 (88.1)	<.001
30–39	11 (14.9)	63 (85.1)	
40–49	7 (13.7)	44 (86.3)	
50–59	13 (31.7)	28 (68.3)	
60–69	14 (48.3)	15 (51.7)	
70+	13 (50.0)	13 (50.0)	
Race (%)			.157
White	43 (28.1)	110 (71.9)	
Asian	8 (16.0)	42 (84.0)	
Other	12 (20.0)	48 (80.0)	
Sexual function, mean (SD)			
SHIM score	11.90 (5.95)	20.19 (5.63)	<.001
MSHQ-EjD score	5.98 (3.59)	12.36 (2.51)	<.001
Bother score	3.10 (1.56)	1.02 (1.49)	<.001
Comorbidities (%)			
Erectile dysfunction	49 (77.8)	42 (21.0)	<.001
Hyperlipidemia	11 (17.5)	39 (19.5)	.861
Diabetes	4 (6.3)	9 (4.5)	.797
Hypogonadism	12 (19.0)	59 (29.5)	.142
LUTS	12 (19.0)	19 (9.5)	.068
History of pelvic cancer	13 (20.6)	12 (6.0)	.001
Current prescription (%)			
Antiepileptic or antipsychotic	17 (27.0)	28 (14.0)	.028
Alpha inhibitor	7 (11.1)	б (3.0)	.024
Opioid	30 (47.6)	54 (27.0)	.004

 $E_{i}D = e_{j}aculatory dysfunction; LUTS = lower urinary tract symptoms; MSHQ-E_{j}D = Male Sexual Health Questionnaire E_{j}aculatory Dysfunction; SD = standard deviation; SHIM = Sexual Health Inventory for Men.$

presenting with specific conditions such as lower urinary tract symptoms (LUTS), benign prostatic hypertrophy, or erectile dysfunction (ED).^{8–12} In particular, a multinational survey of more than 12,000 men between 50 and 80 years of age found 46% with reduced amount of ejaculate and 5% with anejaculation.¹² EjD was particularly prevalent among men aged 70–80 years and was correlated with LUTS severity. Beyond this study, most have focused on men presenting with a single condition rather than a subpopulation of men. Among men with ED, 57.8% were found to have some form of EjD, and cardiac disease and certain medications (antipsychotics and antidepressants) were found to increase the risk of development of EjD.⁸

Although EjD has been characterized within the general population and within certain specific conditions, men presenting for consultation within a men's health clinic have yet to be studied. As male sexual dysfunction increases with age and the impact that EjD may have on a man and/or his partner should not be underestimated as it can be associated with significant distress, sexual dissatisfaction, and relationship strain, it warrants continued investigation.⁵ We therefore sought to characterize the prevalence and risk factors for EjD in a population of men referred to a men's health clinic.

METHODS

Study Population

This retrospective review was approved by the institutional review board and covered patients presenting to an outpatient urology men's health clinic at an academic teaching hospital from March 1, 2019 to October 31, 2019. Specifically, this clinic receives referrals for patients with ED, EjD, infertility, Peyronie's disease, hypogonadism, vasectomy and reversal of vasectomy, and patients with non-oncologic testicular pathology (eg, varicocele, chronic pain, and so on). A chart review was performed on all patients, regardless of known EjD or not, who completed 2 questionnaires (Sexual Health Inventory for Men [SHIM] and the Male Sexual Health Questionnaire Ejaculatory Dysfunction [MSHQ-EjD] Short Form) that were routinely collected for all new patients.^{13,14} All surveys were administered by medical assistants without a physician present before their visit to limit bias. This study was limited to male patients, and those patients who had incomplete surveys were excluded from the study. The electronic medical records of qualifying patients were further reviewed to obtain information regarding patient demographics, comorbidities, and medication usage.

medications								
	Ejd or (95% CI)	P-value	Bother OR (95% CI)	P-value	Strength OR (95% CI)	P-value	Volume OR (95% CI)	P-value
Age	1.01 (0.98–1.04)	.24	1.02 (0.99–1.04)	.18	1.07 (1.04–1.10)	<.0001	1.07 (1.04–1.10)	<.0001
<30	Ref		Ref		Ref		Ref	
30—39	1.16 (0.33–4.56)	.82	0.68 (0.28–1.68)	.40	1.74 (0.64–5.09)	.29	0.83 (0.31–2.26)	.71
40—49	0.95 (0.23–4.16)	.95	0.74 (0.28–1.93)	.53	1.92 (0.64–6.00)	.25	1.28 (0.46–3.67)	.63
50—59	2.34 (0.61–9.79)	.23	0.80 (0.28–2.24)	.67	11.30 (3.62–38.77)	<.0001	4.37 (1.56–12.99)	.006
60–69	2.63 (0.59–12.55)	.21	1.70 (0.50–5.94)	.39	10.05 (2.5–45.87)	.002	4.99 (1.43–18.80)	.01
70+	1.69 (0.34–8.84)	.52	2.35 (0.56–11.31)	.26	21.49 (3.91–178.92)	.001	42.36 (6.20–875.2)	.001
Race								
White	Ref		Ref		Ref		Ref	
Asian	0.58 (0.18–1.69)	.34	0.31 (0.13–0.70)	.007	1.18 (0.49–2.80)	.71	0.90 (0.38–2.08)	.80
Other	0.94 (0.36–2.36)	.89	0.61 (0.29–1.26)	.19	1.11 (0.50 – 2.47)	.79	1.32 (0.61 – 2.83)	.48
Comorbidities								
Erectile dysfunction	15.04 (6.76–35.92)	<.0001	6.92 (3.50–14.26)	<.0001	9.72 (4.58–21.95)	<.0001	4.27 (2.13–8.76)	<.0001
Hyperlipidemia	0.43 (0.15–1.14)	.10	1.08 (0.47–2.47)	.85	0.45 (0.17–1.16)	.11	0.67 (0.26–1.61)	.37
Diabetes	0.34 (0.06–1.54)	.18	0.85 (0.18–4.23)	.83	0.80 (0.14–6.72)	.81	0.44 (0.08–2.30)	.32
Hypogonadism	1.03 (0.42–2.46)	.94	1.47 (0.76–2.85)	.25	2.02 (0.96–4.31)	.07	1.81 (0.89–3.72)	.11
LUTS	0.80 (0.27–2.23)	.67	0.71 (0.26–1.90)	.49	2.28 (0.71–8.05)	.18	1.48 (0.50–4.41)	.48
History of pelvic cancer	1.57 (0.50–4.93)	.44	0.49 (0.16–1.51)	.22	2.33 (0.58–10.28)	.24	2.87 (0.82–11.04)	.11
Medications								
Antiepileptic or antipsychotic	0.79 (0.27–2.23)	.67	1.80 (0.69–4.76)	.23	0.89 (0.29–2.64)	.84	0.77 (0.26–2.22)	.64
Alpha inhibitor	6.82 (1.57–30.16)	.01	8.69 (1.84–64.24)	.01	2.46 (0.46–13.49)	.29	3.55 (0.68–18.59)	.12
Opioid	1.75 (0.73–4.15)	.20	1.16 (0.56–2.36)	.68	1.08 (0.47–2.41)	.85	1.66 (0.77–3.57)	.19

Table 2. Multivariable regression for odds of development of EjD, bother by EjD, strength of ejaculation, and volume of ejaculate with sociodemographic factors, comorbidities, and medications

CI = confidence interval; EjD = ejaculatory dysfunction; LUTS = lower urinary tract symptoms; OR = odda ratio.

Table 3.	Average	SHIM,	MSHQ,	and bother	scores	stratified	by	sociodemographic	factors and	comorbidities

	SHIM	MSHQ-EjD	Bother score
Age			
<30	20.5 ± 5.5	12.7 ± 2.2	1.0 ± 1.5
30–39	20.8 ± 4.8	12.3 ± 3.3	1.2 ± 1.7
40–49	20.4 ± 5.0	12.3 ± 2.4	1.2 ± 1.6
50—59	16.8 ± 7.2	9.8 ± 3.9	1.3 ± 1.6
60–69	13.6 ± 7.2	7.2 ± 4.4	2.6 ± 2.0
70+	10.3 ± 5.7	6.6 ± 2.9	3.0 ± 1.5
Race			
White	17.9 ± 7.0	10.5 ± 4.1	1.8 ± 1.8
Asian	18.6 ± 6.0	11.6 ± 3.4	1.1 ± 1.7
Other	18.8 ± 6.6	11.0 ± 3.8	1.3 ± 1.6
SHIM score			
22–25	24.0 ± 1.1	13.3 ± 2.2	0.5 ± 1.1
17—21	19.0 ± 1.3	10.7 ± 3.3	1.7 ± 1.5
12–16	14.3 ± 1.5	9.0 ± 3.0	2.7 ± 1.7
8—11	9.6 ± 1.1	8.2 ± 3.0	2.3 ± 1.9
1—7	5.7 ± 0.9	5.6 ± 3.6	3.2 ± 1.7
Comorbidities			
Erectile dysfunction	10.1 ± 4.2	7.6 ± 3.5	2.7 ± 1.8
Hyperlipidemia	16.2 ± 7.3	10.4 ± 3.7	1.7 ± 1.8
Diabetes	10.3 ± 5.3	8.3 ± 3.3	2.9 ± 2.0
Hypogonadism	19.4 ± 5.2	11.5 ± 3.0	1.3 ± 1.5
LUTS	13.6 ± 6.3	8.3 ± 4.0	2.1 <u>+</u> 1.9
History of pelvic cancer	12.8 ± 7.5	6.7 ± 4.9	2.0 ± 1.7
Medications			
Antiepileptic or antipsychotic	15.3 ± 7.2	8.8 ± 4.4	2.1 ± 1.7
Alpha inhibitor	15.5 ± 7.6	7.8 ± 4.9	2.9 ± 1.7
Opioid	16.1 ± 7.4	9.4 ± 4.5	2.0 ± 1.8

 $E_{JD} = e_{JD} = e_{JD} = P_{JD} = P$

Survey Instruments

2 validated surveys—the SHIM and MSHQ-EjD—were administered to patients.^{15,16} The SHIM instrument is a widely used measure of erectile function consisting of 5 questions and a total score ranging from 1 to 25. The MSHQ-EjD is a measure of ejaculatory function consisting of 4 questions with Likert scale response options, each ranging from 0 to 5.

Statistical Methods

Patient characteristics and survey responses were analyzed using descriptive statistics, including proportions, median, and mean \pm standard deviation (SD). Categorical variables were analyzed by the $\chi 2$ test or Fisher's exact test as appropriate. Normally distributed continuous variables were analyzed by Student's *t*-test, whereas skewed continuous variables were analyzed by the Wilcoxon rank sum test.

For the purpose of multivariable logistic regression analysis, we dichotomized outcome variables. SHIM scores less than 18 were considered to be ED. A response of "About half the time" or less for "How often have you been able to ejaculate when having difficulties, have you been bothered by this?" was considered as bothered by EjD. A response "Somewhat less strong than it used to be" or less for "How would you rate the strength or force of your ejaculation?" was considered poor strength. A response of "Somewhat less than it used to be" or less for "How would you rate the amount or volume of semen or fluid when you ejaculate?" was considered poor volume. Independent factors associated with EjD, EjD bother, and

sexual activity?" was considered EjD. A response of at least "A

little bothered" for the question "If you have had any ejaculation

ejaculatory strength and volume were investigated by multivariate logistic regression. All data were analyzed using R v3.5.3 (R Foundation for Statistical Computing). The significance level for all statistical tests was set at 0.05, and all tests were 2 sided.

RESULTS

In total, for all 263 men completing the questionnaires with unknown EjD status, 63 men (24%) were identified by their questionnaire response as having EjD compared with 200 men

pelvic cancer, a	ntiepileptic medications, a	ntipsychotic m	edications, and opioid prescr	iption)				
	Patients with ED				Patients without ED			
	Ejd or (95% CI)	<i>P</i> -value	Bother OR (95% CI)	<i>P</i> -value	ejd or (95% CI)	<i>P</i> -value	Bother OR (95% CI)	<i>P</i> -value
Age	0.98 (0.94–1.02)	.29	0.99 (0.94–1.04)	.63	1.06 (1.02—1.11)	10.	1.03 (1.00–1.07)	.03
<30	Ref		Ref		Ref		Ref	
30–39	2.06 (0.28–16.2)	.48	1.18 (0.13–10.54)	88.	0.92 (0.13–8.07)	.93	0.44 (0.15–1.33)	Ν
40-49	1.30 (0.14—12.04)	.92	1.00 (0.09–11.04)	1.00	0.51 (0.02–6.11)	.60	0.51 (0.16—1.63)	.26
5059	2.15 (0.24–20.33)	<u>8</u>	0.32 (0.03–3.10)	.34	2.96 (0.43–2.60)	.28	1.23 (0.35-4.23)	.74
69-09	1.54 (0.17—14.53)	67.	0.41 (0.03-4.36)	.47	3.75 (0.30-4.50)	.28	3.12 (0.60–18.10)	<u>81</u> .
70+	0.41 (0.04-4.02)	.70	0.58 (0.04–8.09)	69.	29.0 (2.64–491.03)	10.	8.34 (0.86–197.43)	OI.
Race								
White	Ref		Ref		Ref		Ref	
Asian	0.35 (0.07–1.65)	.44	0.16 (0.02-0.87)	.04	0.49 (0.02–3.53)	.55	0.27 (0.07–0.82)	.03
Other	0.36 (0.08–1.53)	<u>er</u> .	0.40 (0.07–2.22)	.30	1.20 (0.27–4.70)	.80	0.52 (0.20–1.24)	Ŀ.
Cl = confidence	interval; ED = erectile dysfun	ction; EjD = ejac	ulatory dysfunction; OR = odds	s ratio.				

(76%) who did not have EjD (Table 1). The mean age for men with EjD was 53.8 years (SD: +/- 15.6) vs 42.6 years (SD: +/- 14.4) for those without EjD (P < .001). EjD was more common in men older than 50 years of age (63%). There was no significant difference in race between those men with EjD vs those without (P = .16).

The mean SHIM score for those with EjD was 11.9 (SD: +/-5.95) vs 20.2 (SD: +/- 5.63) for those without (P < .001), MSHQ-EjD score 5.9 (SD: +/- 3.59) vs 12.4 (SD: +/- 2.51; P < .001), and MSHQ-EjD bother 3.1 (SD: +/- 1.56) vs 1.02 (SD: +/- 1.49; P < .001). Overall, ED was more common in men with EjD (77%) vs those without (21%; P < .001) as was the history of pelvic cancer (P = .001). There were no significant differences in underlying comorbidities such as hyperlipidemia, diabetes, hypogonadism, or LUTS. On univariate analysis, EjD was associated with a current prescription for an antiepileptic/ antipsychotic, alpha inhibitor, and opioids. However, on multivariate analysis when controlling for ED, only a prescription of an alpha inhibitor was associated with odds of development of EjD (odds ratio [OR]: 6.82, 95% confidence interval [CI]: 1.57-30.16, P = .01; Table 2).

On multivariable regression, when controlling for ED, odds of having EjD was not associated with age overall (OR: 1.01, 95% CI: 0.98–1.04, P = .24; Table 2) nor was odds of being bothered by EjD associated with age (OR: 1.02, 95% CI: 0.99–1.04, P = .18). Importantly, both lower strength of ejaculation (OR: 1.07, 95% CI: 1.04–1.10, P < .0001) and lower volume of ejaculate (OR: 1.07, 95% CI: 1.04–1.10, P < .0001) were positively associated with increasing age. Although Asians reported less bother with EjD compared with white men (OR: 0.31, 95% CI: 0.13–0.70, P = .007), no other differences based on race/ethnicity were identified.

Patients with ED had significantly higher odds of developing EjD (OR: 15.04, 95% CI 6.76–35.92, P = <0.0001), being bothered by EjD (OR: 6.92, 95% CI: 3.50–14.26, P = <0.0001), and having low strength of ejaculation (OR: 9.72, 95% CI: 4.58–21.95, P < .0001) or volume of ejaculate (OR: 4.27, 95% CI: 2.13–8.76, P < .0001; Table 3). Comorbidities such as hyperlipidemia, diabetes, hypogonadism, and LUTS were not associated with measures of ejaculation. Importantly, when patients were stratified into those with and without ED and compared on multivariate regression, those without ED retained an overall significant association with age (OR: 1.06, 95% CI: 1.02–1.11, P = .01; Table 4). In contrast, patients with ED did not display an association between EjD and age (Table 4) suggesting ED is a mediator of the association between EjD and age.

Both the SHIM and MSHQ-EjD were inversely related to age—that is total scores decreased as age increased (Table 3). In contrast, the MSHQ-EjD bother score increased as age increased. In total, 84.1% of men with EjD were at least a little bothered (MSHQ-EjD \geq 2) and 74.6% were at least moderately bothered (MSHQ-EjD \geq 3).

DISCUSSION

While prior analyses of EjD have focused on the general population and those with LUTS or ED, our analysis sought to examine the prevalence of EjD in patients presenting to a men's health clinic. This study population therefore captures men presenting with a variety of conditions that a urologist may encounter such as ED, infertility, Peyronie's disease, hypogonadism, and various testicular pathologies. Within our population, the rate of EjD was 24%. As the majority of these patients were not referred for EjD, this represents a high percentage of a condition that may negatively impact quality of life and therefore warrants attention among providers caring for a similar patient population. As the mean MSQH-EjD bother score was 3.1 of 5 (moderately bothered), there is opportunity here to screen and treat these patients. Overall, EjD appeared to be associated with age, particularly in those older than 70 years of age, when examined within the population without ED. However, this association was lost when the ED population was examined alone suggesting that ED is a mediator of EjD. Those men with EjD were more affected by ED and were more bothered by their EjD. ED and alpha inhibitors were associated with development of EjD, whereas other underlying comorbidities were not. There were not significant associations with race/ethnicity suggesting that all are similarly affected and bothered.

The prevalence of EjD within the general population was established by Rosen et al¹² in 2003 when they performed a multinational survey (the United States and 6 European countries) in 50- to80-year-old men using 2 different questionnaires: the Danish Prostatic Symptom Score for sexual function and the International Index of Erectile Function (of which SHIM is a derivative). The authors found high rates of ED with 48.7% of their sample reporting difficulty with achieving an erection which increased with age. With regard to EjD, 46.2% had reduced volume or anejaculation. Similar to our study, age was a predictor of sexual dysfunction and men with more comorbidities (eg, hypertension, diabetes, cardiac disease, and so on) tended to have more EjD. In addition, there was a trend of increasing ejaculation difficulty with age with 74.3% of men aged 70-80 years reporting difficulty. Severity of LUTS was associated with increasing EjD; however, this was based on International Prostate Symptom Score unlike in our study which utilized diagnosis codes which could explain the discordant findings. While their study utilized a similar ED questionnaire and a different sexual function questionnaire, it reports a similar age and co-morbidity outcomes for EjD albeit with lower prevalence given the population surveyed.

The remaining studies in the literature have focused on men with specific conditions such as ED or LUTS. Paduch, et al examined survey data utilizing the MSHQ-EjD from participants screened for a clinical trial examining testosterone replacement in men with EjD.¹⁷ While the trial was specifically examining men with EjD, 88% reported some baseline issue with a high level of bother at 68% similar to reported in our study. Furthermore, a study of aggregate data from trials of tadalafil versus placebo, which covered over 12,000 men, found 57.8% reported abnormal ejaculatory function based on IIEF questions 9 and 10.8 The higher prevalence than we report here may be due attributed to the presence of ED in all patients. The frequency of EjD was also found to increase with severity of ED and the authors found a similar trend of EjD with increasing comorbidity (e.g. cardiac disease). Interestingly, EjD was found to be associated with younger age which is contrary to what we report here. The relationship between EjD and ED may be due to a perceived lack of control which could be distracting causing loss of erections. Furthermore, the loss of erectile strength may lead to more EjD leading to a detrimental cycle.¹⁸ EjD is probably best studied in the subset of patients experiencing LUTS. A number of studies have examined this association utilizing, mainly, the International Prostate Symptom Score to assess LUTS and a variety of sexual dysfunction questionnaires to examine EjD (for example the Danish Prostatic Symptom Score for sexual function, MSHQ, Brief Sexual Function Inventory, and International Continence Society Questionnaire sexual function). As summarized by Hellstrom et al,¹⁹ all studies have found increased odds of EjD with LUTS, and generally, these odds increase with severity. Corona et al²⁰ reported in a series of 2,437 men, of whom 29.9% had EjD, either DE or premature ejaculation, that 26% of patients with DE had hypogonadism with a hazard ratio of 1.83 (95% CI: 1.14-3.94) suggesting that testosterone may be a mediator of EjD. While we were unable to find a correlation between hypogonadism and EjD, we did not measure serum testosterone levels and relied on diagnostic codes which may explain this finding.

As demonstrated in the present study, EjD may be undiagnosed in many patients while causing significant bother. The underlying reason for lack of diagnosis is unknown and may include, but not be limited to, a lack of recognition, hesitancy by the patient or provider to explore symptoms, or time constraints within a modern healthcare setting. Various treatments are available for a variety of EjD conditions including DE, anejaculation, and anorgasmia. While sex therapy can depend on availability of qualified therapists, various pharmacologic treatments have been described including alpha-1 adrenergic receptor agonists selective serotonin reuptake inhibitors and tramadol. However, many treatments remain off-label and efficacy is varied which may add to distress for patients, therefore more research is required to better treat these conditions.

The present study has several limitations that warrant mention. First, there is inherent selection bias as the surveys were conducted in a urology clinic for those patients referred for urologic conditions. However, we sought to examine the prevalence of EjD within a specific subset of the urologic population. In addition, not every patient filled out a survey, and therefore, theoretically we could be examining those patients more willing to complete a survey on EjD (eg, those with either high level or very low level of dysfunction). However, this is unlikely as there are high completion rates of questionnaires before clinic visits as it is a requirement before evaluation. Second, while we did use 2 validated questionnaires for clinical sexual dysfunction and ED, responses could be subjective, and we did not objectively measure ejaculatory latency time with a stopwatch as has been performed in clinical trials for treatment. In addition, diagnoses of comorbidities, such as LUTS or hypertension, were based on chart review rather than further questionnaires or quantitative data which may confound the results. Finally, the data were obtained from a tertiary referral academic center and therefore may not be generalizable.

In conclusion, this study suggests that EjD is prevalent among patients presenting to a men's health clinic and that patients are bothered by it. EjD, in this population, appears to be associated with development of ED, and could be screened for by providers if they care for a similar population of patients given the potential for significant bother it presents to patients.

Corresponding Author: Michael L. Eisenberg, MD, Department of Urology, Stanford University School of Medicine, 300 Pasteur Dr., Grant Building S285, Stanford, California 94305-5118, USA. Tel: 650-723-5700; Fax: 650-498-5346; E-mail: eisenberg@stanford.edu

Conflict of Interest: The authors report no conflicts of interest.

Funding: None.

STATEMENT OF AUTHORSHIP

Category 1

- (a) Conception and Design Alex M. Kasman; Michael L. Eisenberg
- (b) Acquisition of Data Alex M. Kasman; Hriday P. Bhambhvani
- (c) Analysis and Interpretation of Data Alex M. Kasman; Hriday P. Bhambhvani; Michael L. Eisenberg

Category 2

- (a) Drafting the Article Alex M. Kasman; Hriday P. Bhambhvani
- (b) Revising It for Intellectual Content Michael L. Eisenberg

Category 3

(a) Final Approval of the Completed Article Michael L. Eisenberg

REFERENCES

- Rowland D, McMahon CG, Abdo C, et al. Disorders of orgasm and ejaculation in men. J Sex Med 2010;7(4 PART 2):1668-1686.
- 2. Rowland D, Diest S Van, Incrocci L, et al. Psychosexual factors that Differentiate men with inhibited ejaculation from men with No dysfunction or Another sexual dysfunction. J Sex Med 2005;2:383-389.
- **3.** Althof SE, Shindel A, Adaikan G, et al. An Evidence-based Unified Definition of Lifelong and Acquired premature

Ejaculation : report of the Second International Society for sexual medicine Ad Hoc Committee for the Definition of premature ejaculation. J Sex Med 2014;11:1423-1441.

- 4. Butcher M, Welliver R, Sadowski D, et al. How is delayed ejaculation defined and treated in North America? Andrology 2015;3:626-631.
- 5. Jenkins LC, Mulhall JP. Delayed orgasm and anorgasmia. Fertil Steril 2015;104:1082-1088.
- 6. Althof SE, Mcmahon CG. Contemporary Management of Disorders of male orgasm and ejaculation. Urology 2016;93:9-21.
- 7. Althof SE. Psychological interventions for delayed ejaculation/ orgasm. Int J Impot Res 2012;24:131-136.
- Paduch DA, Bolyakov A, Beardsworth A, et al. Factors associated with ejaculatory and orgasmic dysfunction in men with erectile dysfunction: analysis of clinical trials involving phosphodiesterase type 5 inhibitor tadalafil. BJUI 2011;109:1060-1068.
- **9.** Corona G, Mannucci E, Petrone L, et al. Psychobiological Correlates of delayed ejaculation in male patients with sexual dysfunctions. J Androl 2006;27:453-458.
- Corona G, Boddi V, Gacci M, et al. Perceived ejaculate volume Reduction in patients with erectile dysfunction: Psychobiologic Correlates. J Androl 2011;32:333-339.
- Corona G, Jannini EA, Mannucci E, et al. Different testosterone levels are associated with ejaculatory dysfunction. J Sex Med 2008;5:1991-1998.
- 12. Rosen R, Altwein J, Boyle P, et al. Lower urinary tract symptoms and male sexual dysfunction: the multinational survey of the aging male (MSAM-7). Eur Urol 2003;44:637-649.
- **13.** Rosen R, Cappelleri J, Smith M, et al. Development and evaluation of an abridged, 5-item version of the International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. **Int J Impot Res 1999;11:319-326.**
- 14. Rosen RC, Catania J, Pollack L, et al. Male sexual health questionnaire (MSHQ): scale development and Psychometric validation. Urology 2004;64:777-782.
- Cappelleri J, Rosen R. The Sexual Health Inventory for Men (SHIM): a 5-year review of research and clinical experience. Int J Impot Res 2005;17:307-319.
- **16.** Rosen R, Catania J, Althof S. Development and validation of four-item version of Male Sexual Health Questionnaire to assess ejaculatory dysfunction. **Urology 2007;69:805-809.**
- Paduch D, Polzer P, Morgentaler A, et al. Clinical and demographic Correlates of ejaculatory dysfunctions other than premature ejaculation: a Prospective, Observational study. J Sex Med 2015;12:2276-2286.
- 18. Jannini EA, Lombardo F, Lenzi A. Correlation between ejaculatory and erectile dysfunction. Int J Androl 2005;28:40-45.
- 19. Hellstrom WJG, Giuliano F, Rosen RC. Ejaculatory dysfunction and its association with lower urinary tract symptoms of benign prostatic Hyperplasia and BPH treatment. Urology 2009;74:15-21.
- 20. Corona G, Jannini EA, Lotti F, et al. Premature and delayed ejaculation: two ends of a single continuum influenced by hormonal milieu. Int J Androl 2011;34:41-48.