

Associations of vasectomy with sexual dysfunctions and the sex life of middle-aged men

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Abstract

Background: Vasectomy is a safe and effective form of contraception. However, fear of altered sexual function is still associated with vasectomy in many men.

Objectives: To assess the prevalence of vasectomy among middle-aged men in Germany and to investigate possible associations between a previous vasectomy and sexual dysfunctions.

Methods: Data on lifestyle, sexual activity, satisfaction, and dysfunction from 5425 middle-aged, heterosexual men were collected. Differences between vasectomized (VM) and non-vasectomized men (NVM) were assessed. Multiple logistic regression analyses were calculated to determine variables associated with erectile dysfunction (ED), premature ejaculation (PE), and low libido.

Results: 5425 men with a mean age of 50.6 ± 0.8 years were included in this analysis. Vasectomy was performed in 12.5% (679/5425) on average 8.6 ± 5.8 years ago. 84.4% were sexually active in the last 3 months (93.0% in vasectomized men vs. 83.2% in non-vasectomized men; $p < 0.001$), and 45.4% were satisfied with their sexual life (55.2% in vasectomized men vs. 44.0% in non-vasectomized men; $p < 0.001$). The prevalence of erectile dysfunction was significantly lower in vasectomized men (12.1% vs. 20.1%; $p < 0.001$), and a previous vasectomy was associated with a decreased risk for erectile dysfunction in multivariable regression analysis (OR: 0.65 [0.40–0.83]). The prevalence of low libido (4.7% in vasectomized men vs. 7.1% in non-vasectomized men; $p = 0.02$) was marginally higher among non-vasectomized men. The prevalence of premature ejaculation (7.1% in vasectomized men vs. 6.1% in non-vasectomized men, $p = 0.5$) did not differ significantly between vasectomized and non-vasectomized men.

Discussion: A previous vasectomy is not associated with an increased risk for sexual dysfunction, and vasectomized middle-aged men are more sexually active and satisfied compared to their non-vasectomized counterparts. The main limitations are the retrospective design and missing pre-vasectomy data.

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Conclusions: Men can be reassured that the fear of sexual dysfunctions and diminished sex life after a vasectomy is unwarranted.

KEYWORDS

erectile dysfunction, low libido, premature ejaculation, vasectomy

1 | INTRODUCTION

Vasectomy is a simple and safe way of contraception.¹ Following vasectomy, other contraceptives can be abandoned after verification that the semen is free of vital spermatozoa, most often 3 months after the procedure. In contemporary practice, vasectomy is performed with minimal tissue trauma, making severe and lasting complications rare. With the late failure of vasectomy occurring in only 0.04%–0.08% of cases, it has the lowest pearl index of all forms of male contraception.² Worldwide, approximately 2% of men are relying on vasectomy to prevent unwanted reproduction.³ Current data from Germany is scarce, but health insurance agencies estimate that about 50,000 men undergo vasectomy in Germany per year.⁴ Compared to the United States, where half a million vasectomies are performed each year, this rate is less than half after considering the number of citizens.⁵ Additionally, female sterilization by tubal ligation is more than twice as common as vasectomy, and birth control pills remain one of the most utilized contraceptives in Germany.³ Both are accompanied by more frequent complications or side effects as well as higher costs than vasectomy.^{6,7} The most common reason men give for not considering a vasectomy, apart from the permanence of the procedure, is the fear of altered sexual function.⁸ The main risk factors for impaired sexual function, especially erectile dysfunction, are smoking, hypertension, visceral obesity, diabetes, and psychological issues.⁹ However, the association between surgery in the genital region and impaired erectile function is often more intuitive to the public. The alleged correlation between vasectomy and erectile dysfunction (ED) has repeatedly been disproven in small perioperative studies.^{8,10} Nevertheless, one of the earliest studies on the subject stated that there might be a threat of psychologically induced ED through vasectomy.¹¹ Further, results from an Australian population-based study suggest that vasectomized men might have slightly more often a problem with maintaining an erection during sexual intercourse.¹² These diverse findings make it hard to give men seeking advice a conclusive statement on the long-term effects of vasectomy on sexual function. Moreover, data on associations between vasectomy and other sexual dysfunctions, such as low sexual desire and ejaculatory dysfunctions, are still lacking. Therefore, the present analysis aimed to investigate associations between vasectomy and the three most common sexual dysfunctions (ED, low libido (LL), and premature ejaculation (PE) in a large sample of middle-aged German men.

2 | SUBJECTS/PATIENTS AND METHODS

2.1 | Participants

Data for this analysis was collected as a part of the ongoing Bavarian Men's Health (BMH)-Study. The BMH-Study collects prospectively data on various aspects of male physical, mental, and sexual health in a large, population-based random sample of middle-aged Bavarian men concomitantly participating in a prostate cancer screening trial. All men have been recruited at the age of 50 years and will be followed up for 10 years. Data is collected via validated questionnaires and a complementary interview with a physician, which includes a short physical examination (measurement of weight and waist circumference). Data for this analysis was collected between April of 2020 and September of 2023. Overall, $n = 5514$ heterosexual, Caucasian men who completed the questions regarding a previous vasectomy were included. Excluded were men with an incomplete questionnaire, men following vasovagotomy or bilateral orchiectomy, and men with a severe neurological condition ($n = 89$). All participants gave written informed consent. The ethics committee of the Technical University of Munich approved this study. More detailed descriptions of the BMH-Study have been provided previously.¹³

2.2 | Measures

2.2.1 | Vasectomy

Vasectomy status (vasectomized yes, no) and the time since vasectomy was assessed.

2.2.2 | Sexual Dysfunctions

The following sexual dysfunctions were assessed.

2.2.3 | Erectile Dysfunction

ED was assessed using the German version of the International Index of Erectile Function—Erectile Function (IIEF-EF) and the Erection Hard-

ness Score (EHS).^{14,15} ED was defined as an IIEF-EF Score < 26 or, in case of no sexual intercourse in the past 4 weeks, by an EHS < 4.^{14,15}

2.2.4 | Low libido

Low libido was assessed using a question from a previous German study on sexual desire: "How often have you felt sexual desire during the past 4 weeks?"¹⁶ The answers provided were "very frequently", "frequently", "occasionally", "rarely", and "very rarely/never", the latter two answers defined as low sexual desire.

2.2.5 | Premature Ejaculation (lifelong/acquired)

PE was assessed using 2 questions of the Sexual Complaints Screener for Men (SCS-M).¹⁷ The first question was, "Some men cannot control their sexual excitement so that they ejaculate before or shortly (within approximately 2 min) after penetration. Has this happened to you during the last 6 months?". The answers provided were "no sexual activity", "never/almost never", "rarely", "sometimes", "often", and "almost all the time/almost always". The second question was, "Has this been a personal problem for you?". The answers provided were "not at all a problem", "a very small problem", "some problem", "a considerable problem", and "a very great problem". PE was categorized into the following 3 groups: yes (lifelong), yes (acquired/subjective) and, no [PE] following a previous study based on data from the BMH-Study.¹³

2.2.6 | Sex life

Frequency of partnered sexual activity and masturbation within the last 3 months (none, a few times/month to 1 time/week, 2–3 times/week, ≥ 4 times/week), as well as sexual satisfaction (unsatisfied, more or less satisfied, satisfied) were assessed.

2.2.7 | Sociodemographic Factors, Lifestyle Factors, Comorbidities

The following sociodemographic factors were assessed: current partnership (no, yes), duration of current partnership (years) (≤ 5 , 5 to ≤ 10 , > 10 to ≤ 20 , > 20), number of children, level of education (low, intermediate, and high), and self-perceived economic situation (poor, satisfactory, and good).

The following lifestyle factors were assessed: smoking habits (non-smoker, smoker), alcohol consumption (no/low, moderate, excessive), physical activity for 30 min, e.g., walking or gardening (≤ 1 time/week, 2–5 times/week, ≥ 6 times/week), body mass index (kg/m^2) (< 25 , ≥ 25 to < 30 , ≥ 30), and waist circumference (cm) (< 94 , ≥ 94 to < 102 , ≥ 102).¹⁸ Lower urinary tract symptoms (LUTS) were assessed by

the German version of the International Prostate Symptom Score (IPSS) (≤ 7 : no, mild; > 7 : moderate, and severe).¹⁹ Medical history and medication intake were assessed for diabetes mellitus (no, yes), hypertension (no, yes), and hyperlipidemia (no, yes).

2.2.8 | Statistical Analysis

Descriptive analysis included counts, percentages, and means and standard deviations. Chi-square and Wilcoxon tests were used to compare vasectomized and non-vasectomized men. Three separate multiple logistic regression models were calculated to analyze potential explanatory factors, including a previous vasectomy, for ED, low sexual desire, and PE (lifelong). Because all men in the BMH-Study were recruited at age 50, the multiple regression analysis did not include age as an independent variable. Odds ratio (OR) with 95% confidence interval (CI), and p -values were calculated. A significance level of $p < 0.05$ was adopted. Statistical analysis was performed using SAS (Version 9.4) (SAS Institute).

3 | RESULTS

The final analysis comprised 5425 men who were 50 years of age. Around 12.5% of them had been vasectomized. The average age at vasectomy was 41.4 ± 5.8 years. Approximately two-thirds (64.8%) of the vasectomized men had undergone a vasectomy > 5 years prior to the survey. 19.1% of all men had ED with an IIEF-EF < 26 and/or an EHS score < 4 . Low sexual desire was found in 6.8% of men, and 6.2% of men were considered to have lifelong PE (Table 1). The prevalence of ED in vasectomized compared to non-vasectomized men was 12.6% vs. 20.1%. ($p < 0.001$). The prevalence of low sexual desire and lifelong PE in vasectomized men and non-vasectomized men was 4.7% vs. 7.1% ($p = 0.02$) and 7.1% vs. 6.0% ($p = 0.5$), respectively (Figure 1).

More vasectomized men had been sexually active in the past 3 months (93.0% vs. 83.2%; $p < 0.001$) and stated to be satisfied by their sex life compared to non-vasectomized men (55.2% vs. 44.0%; $p < 0.001$). Vasectomized men were more often in a partnership compared to non-vasectomized men (95.6% vs. 86.7%) ($p < 0.001$). Smoking habits, BMI, waist circumference, economic situation as well as the prevalence of diabetes, hypertension, and hyperlipidemia did not differ significantly between vasectomized and non-vasectomized men (all $p > 0.05$). (Table 2)

In multiple logistic regression analysis with backwards elimination, vasectomy was significantly associated with a decreased risk for ED (OR: 0.65 [0.40–0.83]) and a slightly increased risk for PE (OR: 1.43 [1.00–2.03]). No association was found between vasectomy and low sexual desire (OR: 0.67 [0.36–1.18]). Associations were found between the three sexual dysfunctions and sexual satisfaction, comorbidities (LUTS, diabetes mellitus, and hypertension), as well as lifestyle factors (increased waist circumference, physical activity ≤ 1 time/week). (Table 3)

TABLE 1 Characteristics of the study sample (n = 5425).

Characteristic	n	%
Vasectomized		
Yes	679	12.5
No	4746	87.5
Time since vasectomy		
< 2 years	56	8.5
2–5 years	177	26.7
> 5 years	429	64.8
Mean time since vasectomy (years); mean (\pm SD)	8.6 (\pm 5.8)	
Sexual dysfunctions		
Erectile dysfunction (IIEF-EF; EHS) (missing: 232)		
No (26–30; 4)	4200	80.9
Yes (\leq 25; < 4)	993	19.1
Low sexual desire (missing: 254)		
No	4820	93.2
Yes	351	6.8
Premature ejaculation (missing: 884)		
No	3798	83.6
Yes (lifelong)	280	6.2
Yes (acquired/subjective)	463	10.2
Sex life		
Partnered sexual activity (past 3 months) (missing: 93)		
None	831	15.6
A few times/month to 1 time/week	3504	65.7
2–3 times/week	838	15.7
\geq 4 times/week	159	2.9
Solo-masturbation (past 3 months) (missing 371)		
None	519	10.3
A few times/month to 1 time/week	3021	59.8
2–3 times/week	1107	21.9
\geq 4 times/week	407	8.0
Sexual satisfaction (missing: 213)		
Unsatisfied	1076	20.6
More or less satisfied	1768	33.9
Satisfied	2368	45.4
Sociodemographic factors		
Current partnership (missing: 3)		
No	662	12.2
Yes	4760	87.8
Duration of current partnership (years); mean (\pm SD)		
\leq 5	413	8.8
5 to \leq 10	427	9.1
> 10 to \leq 20	1562	33.2
> 20	2298	48.9

(Continues)

TABLE 1 (Continued)

Characteristic	n	%
Number of children; mean (\pm SD) (Munich) (missing: 0)		
Childless	1481	27.3
Level of education (missing: 0)		
Low	515	9.5
Intermediate	1033	19.0
High	3877	71.5
Self-perceived economic situation (missing: 17)		
Poor	100	1.8
Satisfactory	713	13.2
Good	4595	85.0
Lifestyle factors		
Smoking habits (missing: 36)		
Non-smoker	4688	87.0
Smoker	701	13.0
Alcohol consumption (missing: 131)		
No/low	940	17.8
Moderate	4083	77.1
Excessive	271	5.1
Physical activity (missing: 32)		
\leq 1 time/week	742	13.8
2–5 times/week	3305	61.3
\geq 6 times/week	1346	24.9
Body mass index (kg/m ²) (missing: 42)		
< 25	1938	36.0
\geq 25 to < 30	2450	45.5
\geq 30	995	18.5
Waist circumference (cm) (missing: 62)		
< 94	2396	44.7
\geq 94 – \leq 102	1441	26.9
> 102	1526	28.4
Comorbidities		
Lower urinary tract symptoms (IPSS) (missing: 78)		
No, mild (\leq 7)	4511	84.4
Moderate, severe (> 7)	836	15.6
Diabetes (missing: 0)		
No	5277	97.3
Yes	148	2.7
Hypertension (missing: 0)		
No	4463	82.3
Yes	962	17.7
Hyperlipidemia (missing: 0)		
No	5122	94.4
Yes	303	5.6

Abbreviations: EHS, Erection Hardness Score; IPSS, International Prostate Symptom Score; IIEF-EF, International Index of Erectile Function—Erectile Function; SD, standard deviation.

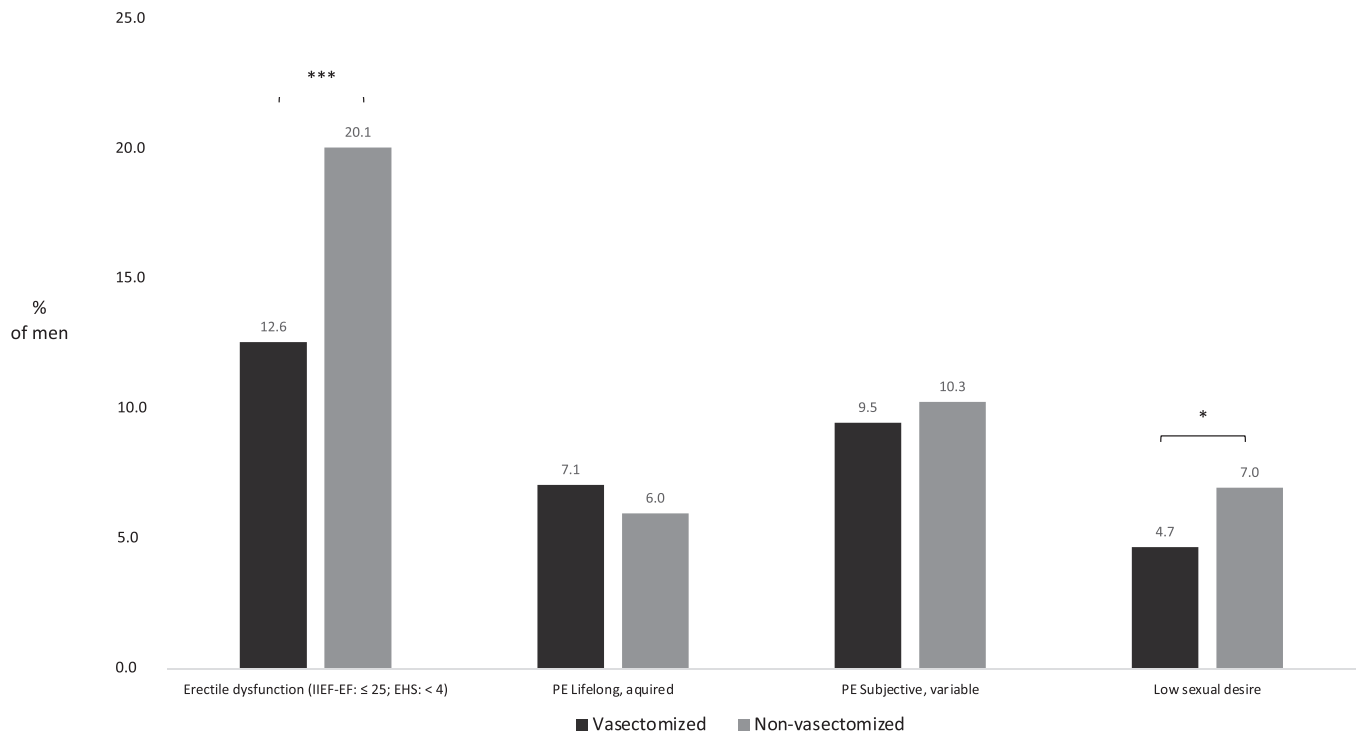


FIGURE 1 Prevalence of sexual dysfunctions in vasectomized ($n = 679$) and non-vasectomized men ($n = 4746$). EHS, Erection Hardness Score; IIEF-EF, International Index of Erectile Function—Erectile Function; PE, premature ejaculation.

4 | DISCUSSION

The fear of altered sexual function is still linked to vasectomy by many men.^{8,20,21} Therefore, this study aimed to investigate sexual dysfunctions, sexual activity, sexual satisfaction, various sociodemographic, and lifestyle factors, as well as comorbidities in a large sample of middle-aged, vasectomized, and non-vasectomized men.

Results from this study suggest that a vasectomy does not cause negative alterations in sexual function. Moreover, this study showed that vasectomized men were less likely to report ED, had higher sexual satisfaction, and were more sexually active compared to non-vasectomized men. These results are in line with previous studies from Brazil and Austria, investigating men before and after vasectomy using the IIEF-score, which demonstrated that sexual function either did not change at all or slightly improved following vasectomy.^{10,20} In these studies, no significant changes in the erectile function domain of the IIEF (IIEF-EF) were found. Still, the Brazilian study pointed out that a single item focusing on maintaining an erection during intercourse was recorded higher after vasectomy.¹⁰ The results of our analysis go even further, showing that a vasectomy is associated with a decreased risk of ED in multiple regression analysis that considered several clinical and lifestyle factors. These findings suggest that a vasectomy is not a danger to a man's capacity to achieve and maintain an erection but may even be beneficial in this regard. One reason for this association might be that a vasectomy removes the fear of an unwanted pregnancy. This might free up men during sexual intercourse and reduce psychologically induced ED. Further, following a vasectomy, there is no necessity

for other forms of contraception. This might lead to an improved sex life for both partners as sexual intercourse with, for example, a condom might be less enjoyable for both partners.^{22,23} Taken together, this might subconsciously reinsure men in their sexual relationships as well as in their sexual ability, facilitating good erectile function and leading to a decreased risk of psychologically induced ED. Comparing vasectomized with non-vasectomized men, we were able to show a higher sexual frequency and sexual satisfaction in these men, indicating a more active and satisfying sex life even years after vasectomy. These results are in line with studies from Austria and the US, showing that a vasectomy was associated with higher sexual satisfaction, sexual frequency, and relationship satisfaction for men as well as their female partners, highlighting beneficial aspects of a vasectomy with regards to male and female sex life.^{20,24} In contrast to our findings, a previous population-based study from Australia reported, after adjusting for age and other socio-demographic factors, that vasectomized men reported slightly more frequent problems with maintaining an erection during intercourse compared to non-vasectomized men. However, in the Australian study, only one item was used to assess erectile function; comorbidities were not factored in, and the participants' ages ranged between 16 and 64 years.¹² This might have led to an insufficient assessment of erectile function and a potential association with a previous vasectomy.

Although a more frequent and satisfying sex life of vasectomized compared to non-vasectomized men has been described previously, associations of a vasectomy with low libido have so far not been evaluated.^{8,24} While the concept of low libido remains somewhat

TABLE 2 Comparison between vasectomized (n = 679) and non-vasectomized men (n = 4746).

Characteristic	Vasectomized (%)	Non-vasectomized (%)	p
Sexual dysfunctions			
Erectile dysfunction (IIEF-EF; EHS)			<0.001
No (26–30; 4)	87.4	79.9	
Yes (≤ 25 ; < 4)	12.6	20.1	
Low sexual desire			0.02
No	95.3	93.0	
Yes	4.7	7.0	
Premature ejaculation			0.5
No	83.4	83.7	
Yes/Lifelong, acquired	7.1	6.0	
Yes/Subjective, variable	9.5	10.3	
Sex life			
Partnered sexual activity (past 3 months)			<0.001
None	7.0	16.8	
A few times/month to 1 time/week	66.7	65.6	
2–3 times/week	21.8	14.8	
≥ 4 times/week	4.4	2.8	
Solo-masturbation (past 3 months)			0.9
None	9.9	10.3	
A few times/month to 1 time/week	60.9	59.6	
2–3 times/week	21.1	22.0	
≥ 4 times/week	8.2	8.0	
Sexual satisfaction			<0.001
Unsatisfied	17.3	21.1	
More or less satisfied	27.5	34.9	
Satisfied	55.2	44.0	
Sociodemographic factors			
Current Partnership			<0.001
No	4.4	13.3	
Yes	95.6	86.7	
Duration (years); mean (\pm SD)	18.4 (\pm 9.7)	16.3 (\pm 10.1)	0.09
Number of Children; mean (\pm SD)	1.9 (\pm 0.9)	1.3 (\pm 1.1)	<0.001
Childless	10.3	29.8	<0.001
Level of Education			<0.001
Low	11.8	9.2	
Intermediate	23.0	18.5	
High	65.2	72.4	
Self-perceived economic situation			0.048
Poor	1.0	2.0	
Satisfactory	11.1	13.5	
Good	87.9	84.5	
Lifestyle factors			
Smoking Habits			0.2
Non-smoker	88.4	86.8	
Smoker	11.6	13.2	

(Continues)

TABLE 2 (Continued)

Characteristic	Vasectomized (%)	Non-vasectomized (%)	p
Alcohol consumption			<0.001
No/low	12.7	18.5	
Moderate	83.4	76.2	
Excessive	3.9	5.3	
Physical activity			0.027
≤1 time/week	12.6	13.9	
2–5 times/week	58.4	61.7	
≥6 times/week	29.1	24.4	
Body mass index (kg/m ²); mean (± SD)	26.9 (± 4.0)	26.9 (± 4.3)	0.9
Mean waist circumference (cm); mean (± SD)	97.0 (± 11.8)	97.4 (± 12.3)	0.4
Comorbidities			
Lower urinary tract symptoms (IPSS)			0.008
No, mild (≤7)	87.8	83.9	
Moderate, severe (> 7)	12.2	16.1	
Diabetes			0.4
No	97.8	97.2	
Yes	2.2	2.8	
Hypertension			0.4
No	83.5	82.1	
Yes	16.5	17.9	
Hyperlipidemia			0.2
No	95.6	94.2	
Yes	4.4	5.8	

Abbreviations: EHS, Erection Hardness Score; IPSS, International Prostate Symptom Score; IIEF-EF, International Index of Erectile Function—Erectile Function; SD, standard deviation.

evasive, recent investigations on the matter stress that a low serum level of androgens is associated with an increased risk for low libido and that partnerships and regular sexual activity are associated with a decreased risk of low libido.²⁵ Although testosterone production is not altered following a vasectomy, one of the fundamental biological purposes of sexual intercourse, reproduction, is no longer possible. Therefore, we also investigated whether sexual desire remained unaffected following a vasectomy. Results of this analysis underline that following a vasectomy, men remain sexually active with a higher frequency and satisfaction compared to their non-vasectomized counterparts. Additionally, vasectomy was not associated with an increased risk of low libido in multiple regression analyses, further indicating that a vasectomy has no negative impact on sexuality. These findings stand in contrast to research on couples experiencing involuntary infertility. In such cases, the emotional stress and physical burden of infertility and associated treatments can negatively impact the couple's sexual relationship, a phenomenon commonly referred to as "inferto-sex syndrome."^{26,27} In comparison, the data from this study suggest that when infertility is a planned and desired outcome, as with vasectomy, no adverse effects on libido or sexual satisfaction are expected.

It has been shown that following a vasectomy, ejaculatory volume slightly decreases, but data on ejaculatory dysfunctions in vasectomized men are lacking.⁸ Ejaculatory dysfunctions are another common group of sexual dysfunctions, with PE being the most investigated.²⁸ PE is defined by early ejaculation, the inability to delay ejaculation, and perceived personal distress, making it, to some extent, a subjective impairment.²⁹ This study assessed PE using the two questions from the Sexual Complaints Screener for men targeting those aspects. Studies on PE have so far not yielded a definitive explanation of an underlying pathomechanism. However, it has been proposed that besides genetic predispositions, certain lifestyle factors, comorbidities such as LUTS, and psychological factors, e.g., higher perceived social pressure and lower self-esteem, are associated with PE.³⁰ In this analysis, LUTS also emerged as the main association with PE. Nevertheless, a vasectomy was also associated with an increased risk for PE in multiple regression analyses. Although this association is rather small and its clinical implication is probably minor, a possible explanation could be the dispensation of other contraceptives. It can be assumed that in the absence of condoms or hormonal contraceptives, sexual sensation may increase for both partners.²³ This might lead, on the one hand, to

TABLE 3 Factors associated with erectile dysfunction, low sexual desire, and premature ejaculation in multiple logistic regression analysis with backward elimination.

	Erectile dysfunction (n = 4255)			Low sexual desire (n = 4893)			Premature ejaculation (n = 4255)		
	OR	[95% CI]	p	OR	[95% CI]	p	OR	[95% CI]	p
Vasectomy (ref.: no)			0.0006						0.045
Yes	0.65	[0.40–0.83]		-			1.43	[1.00–2.03]	
Sexual satisfaction (ref.: unsatisfied)			<0.0001			<0.0001			<0.0001
More or less satisfied/satisfied	0.45	[0.38–0.53]		0.61	[0.48–0.77]		0.26	[0.19–0.35]	
Smoking habits (ref.: non-smoker)			0.02						
Smoker	1.28	[1.04–1.58]		-			-		
Alcohol consumption (ref.: no/low/moderate)									
Excessive	-			-			-		
Physical activity (ref.: ≤1 time/week)									
2–5 times/week	0.76	[0.62–0.94]	0.01	0.64	[0.48–0.87]	0.004	-		
≥6 times/week	0.66	[0.52–0.84]	0.008	0.69	[0.48–0.98]	0.03	-		
Waist circumference (cm) (ref.: ≤94)									
>94–102	1.30	[1.08–1.56]	0.006	0.67	[0.49–0.90]	0.007	-		
>102	1.58	[1.31–1.90]	<.0001	0.86	[0.65–1.14]	0.29	-		
LUTS (IPSS) (ref.: no, mild (≤7))			<0.0001			0.01			<0.0001
Moderate, severe (> 7)	2.08	[1.74–2.49]		1.42	[1.07–1.88]		2.35	[1.76–3.12]	
Diabetes (ref.: no)			0.008						
Yes	1.93	[1.31–2.84]		-			-		
Hypertension (ref.: no)			0.0006			<0.0001			
Yes	1.39	[1.15–1.68]		1.89	[1.45–2.47]		-		
Hyperlipidemia (ref.: no)									
Yes	-			-			-		

Note: Displayed are all variables included in multiple logistic regression analysis; (-) indicates variables that did not meet the significance level.

Abbreviations: CI, confidence interval; IPSS, International Prostate Symptoms Score; LUTS, lower urinary tract symptoms; OR, odds ratio; ref., reference.

an increase in satisfaction but may also cause, in a minority of cases, a (subjectively) shorter sexual experience.

It is essential to acknowledge the limitations of our analysis, primarily its retrospective design and that no prevasectomy data were assessed, restricting assumptions on causalities. Further, our data were assessed via a questionnaire and might be influenced by recall bias. It is important to acknowledge that men who are not sexually active or those with significant erectile dysfunction are less likely to consider vasectomy, which may introduce a selection bias favoring men who are generally more sexually active and have less sexual dysfunctions in the vasectomized group. This could partially explain our results. However, we controlled for both sexual frequency and sexual satisfaction in the multivariable regression analysis and still identified vasectomy as an independent variable associated with a lower risk of erectile dysfunction. This reinforces the conclusion that vasectomy does not negatively impact sexual function. Despite these limitations, this study

of a population-based random sample of > 5000 middle-aged men provides reliable and transferable results. Further, all men were surveyed in a clinical setting by a physician, increasing the validity of the data on sexual dysfunctions, comorbidities, and lifestyle factors. The average age at vasectomy in our sample was 41.4 years, leading to results that allow assumptions on long-term sexual function following a vasectomy. This supplements studies that investigated vasectomized men solely in a perioperative setting. Further, this analysis illustrates that not a vasectomy but rather lifestyle factors and comorbidities put a strain on sexual function in middle-aged men.

5 | CONCLUSIONS

Results of this analysis show that the fear of sexual dysfunctions and the decline of one's sex life following a vasectomy is unjustified.

Vasectomized men seem to have less often erectile dysfunction and a more satisfying sex life compared to non-vasectomized men. These are vital pieces of information for urologists counseling men considering a vasectomy. Recent studies have shown that not only many men but also women are interested in more details on vasectomy from their primary care provider or urologist.³¹ Results from our study provide contemporary valid data that underscore the long-term safety of vasectomy in terms of sexual function and show greater sexual satisfaction and sexual activity in vasectomized men.

AUTHOR CONTRIBUTIONS

Conception and design: Matthias Jahn, Valentin H. Meissner, and Kathleen Herkommer. *Acquisition of data:* Anna Rechberger. *Analysis and interpretation of data:* Matthias Jahn, Valentin H. Meissner, and Kathleen Herkommer. *Drafting of the manuscript:* Matthias Jahn and Anna Rechberger. *Statistical analysis:* Stefan Schiele and Helga Schulwitz. *Administrative, technical, or material support:* Kathleen Herkommer and J. E. Gschwend. *Supervision:* Kathleen Herkommer. *Critical revision of the manuscript for important intellectual content:* All authors.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data are available for bona fide researchers who request it from the authors.

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