

## COUPLES

## Does Endometriosis Affect Sexual Activity and Satisfaction of the Man Partner? A Comparison of Partners From Women Diagnosed With Endometriosis and Controls

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## ABSTRACT

**Background:** Endometriosis-associated pain and dyspareunia influence female sexuality, but little is known about men's experiences in affected couples.

**Aim:** To investigate how men partners experience sexuality in partnership with women with endometriosis.

**Methods:** A multi-center case-control study was performed between 2010 and 2015 in Switzerland, Germany, and Austria. 236 Partners of endometriosis patients and 236 partners of age-matched control women without endometriosis with a similar ethnic background were asked to answer selected, relevant questions of the Brief Index of Sexual Functioning and the Global Sexual Functioning questionnaire, as well as some investigator-derived questions.

**Outcomes:** We sought to evaluate sexual satisfaction of men partners of endometriosis patients, investigate differences in sexual activities between men partners of women with and without endometriosis, and identify options to improve partnership sexuality in couples affected by endometriosis.

**Results:** Many partners of endometriosis patients reported changes in sexuality (75%). A majority of both groups was (very) satisfied with their sexual relationship (73.8% vs 58.1%,  $P = .002$ ). Nevertheless, more partners of women diagnosed with endometriosis were not satisfied ( $P = .002$ ) and their sexual problems more strongly interfered with relationship happiness ( $P = .001$ ) than in partners of control women. Frequencies of sexual intercourse ( $P < .001$ ) and all other partnered sexual activities (oral sex, petting) were significantly higher in the control group. The wish for an increased frequency of sexual activity ( $P = .387$ ) and sexual desire ( $P = .919$ ) did not differ statistically between both groups.

**Clinical Translation:** There is a need to evaluate qualitative factors that influence sexual satisfaction in endometriosis patients.

**Conclusions:** This is one of the first studies to investigate male sexuality affected by endometriosis. The meticulous verification of diagnosis and disease stage according to operation reports and histology allows for a high reliability of diagnosis. Our men's response rate of almost 50% is higher compared to other studies. Recruiting men through their woman partner may have caused selection bias. The adjustment to the specific situation in endometriosis by selecting questions from the Brief Index of Sexual Functioning and Global Sexual Functioning and adding investigator-derived questions likely influenced the validity of the questionnaires. Despite the fact that both partners of endometriosis patients and of control women largely reported high sexual satisfaction, there are challenges for some couples that arise in the context of a sexual relationship when one

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partner has endometriosis. Challenges such as sexuality-related pain or a reduced frequency of sexual activities should be addressed by health care professionals to ameliorate any current difficulties and to prevent the development or aggravation of sexual dysfunction. **Hämmerli S, Kohl Schwartz AS, Geraedts K, et al. Does Endometriosis Affect Sexual Activity and Satisfaction of the Man Partner? A Comparison of Partners From Women Diagnosed With Endometriosis and Controls. J Sex Med 2018;XX:XXX–XXX.**

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**Key Words:** Endometriosis; Sexual Satisfaction; Man Perspective; Partner Sexuality

## INTRODUCTION

A severe disease often affects the quality of life of both the patient and the healthy partner. Changes include physical limitations, to roles and responsibilities in the family, to leisure time activities, as well as in the frequency and quality of sexual activities.<sup>1–3</sup>

Endometriosis is defined as the presence of endometrial tissue in ectopic locations, mainly in the lower pelvis.<sup>4</sup> It affects up to 10% of women of reproductive age, of which approximately 50–70% show disease symptoms such as chronic pelvic pain, often of severe intensity.<sup>5–7</sup> Dyspareunia is 10 times more common than in healthy women and has been reported to occur more often in positions involving deep penetration of the penis,<sup>8,9</sup> and may lead to a decreased frequency of sexual intercourse.<sup>9</sup> Endometriosis-related fatigue and problems to achieve and maintain pregnancy may also disturb sexuality. Endometriosis can induce feelings of guilt for limitations in sexual performance.<sup>6,10</sup> Women may be accused of falsely using pain to hide a lack of sexual desire,<sup>11</sup> which shows that a lack of knowledge of disease symptoms and resulting misunderstandings may disrupt a fulfilling sexual relationship. Endometriosis-related limited physical resilience is often overseen or not accepted as a result of such limited knowledge, and men feel overburdened with their partner's disease and resulting sexuality-related stress.<sup>12</sup> Women often fear the breakdown of a partnership or infidelity as a result of their partner's sexual dissatisfaction.<sup>13</sup> However, partners provide valuable support for women in dealing with endometriosis-associated symptoms and satisfaction in relationships can positively influence disease management.<sup>14</sup> Sexual satisfaction is associated with relationship satisfaction and vice versa, which may induce a vicious circle in which couples dealing with endometriosis become more and more sexually frustrated and unhappy with their relationship.<sup>15–17</sup> Such development may ultimately result in the termination of the partnership.<sup>18</sup>

To date, effects of endometriosis on the life of a patient's healthy partner have only rarely been investigated. The few available studies on the partner's life indicate that partners of women with endometriosis show lower sexual interest and desire and experience a decreased frequency of sexual activities and reduced sexual satisfaction,<sup>6,19,20</sup> but there are also opposite results. A recent study found no differences regarding erectile and orgasmic function as well as intercourse and overall satisfaction between partners of women with endometriosis and partners of

healthy women.<sup>21</sup> The authors argue, however, that such differences may still exist, considering that their questionnaire was suspected to be insufficiently sensitive to the evaluation of qualitative aspects of sexuality.<sup>21</sup> Differences in study designs, questionnaires, and the selection of study participants may also add to differences in findings. As men tend to underestimate the sexual dysfunction of their partners<sup>22</sup> and often wish for a higher frequency of sexual activities than women—which possibly reflects sexual desire—the potential for relationship conflicts and sexual dissatisfaction increases.<sup>23</sup> Hence, methodologically well-designed studies are needed in order to improve understanding of men's experiences in the context of chronic women's diseases such as endometriosis.

We hypothesized that endometriosis leads to greater dissatisfaction of the man partner and that the frequency of sexual activities is lower in couples affected by endometriosis. Furthermore, we estimated frequencies of other sexual activities to be higher in affected couples to compensate a lower frequency of sexual intercourse. Therefore, we evaluated the burden endometriosis imposes on male sexuality by comparing the affected men's sexual desire, sexual satisfaction, and the frequency of their sexual activity to men in relationships without endometriosis. To identify targets for sexual counseling we also evaluated links between sexual satisfaction and various qualitative and quantitative aspects, such as frequencies and time invested into various sexual activities and sexual desire. Potential disruptive factors either known or estimated to influence couple sexuality, such as the number of children or endometriosis characteristics such as time since the initial diagnosis and disease stage, were evaluated through a regression analysis.

## Primary Outcome Measures

Therefore, we aimed to: (1) evaluate sexual desire and satisfaction in men partners of endometriosis patients; (2) investigate differences in the frequency of sexual activities between men partners of women with and without endometriosis; and (3) identify target options for improvement of partnership sexuality in couples affected by endometriosis.

## METHODS

Data for this retrospective matched case-control study were obtained through a multi-centered survey, which is part of a

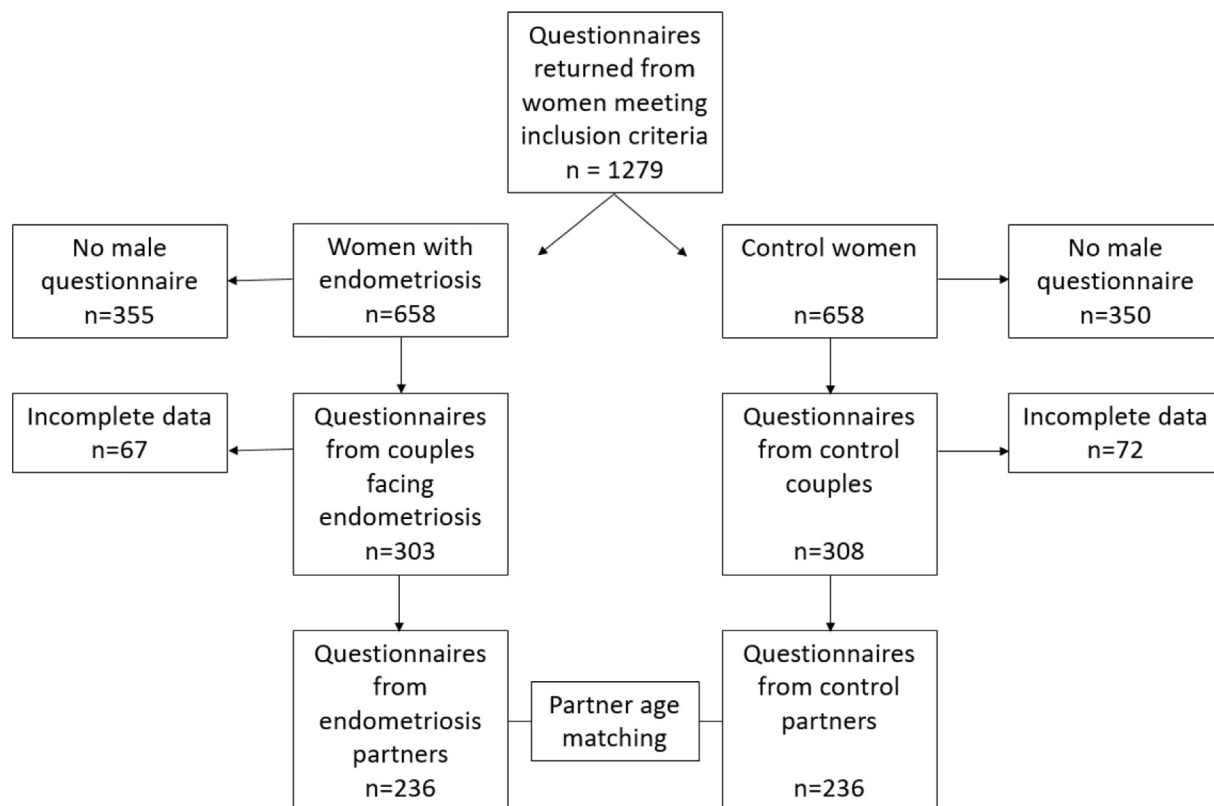


Figure 1. Patient inclusion chart.

larger study in which the women participants will also be examined. Men partners of women with surgically confirmed endometriosis were compared to an unaffected control group. The STROBE criteria were used to draft the article.<sup>24</sup>

Participants were recruited between 2010 and 2015. Part of the study population ( $n = 66$ ) was recruited through different self-help groups for endometriosis patients in Germany. These women did not differ from women recruited in hospitals in terms of socio-demographic features, however, they were significantly older than the hospital group ( $42.45 \pm 6.03$  vs  $37.02 \pm 7.21$  years,  $P < .001$ ), and reported a longer time since the initial diagnosis ( $82.1 \pm 58.4$  vs  $37.2 \pm 44.0$  months,  $P < .001$ ) as well as a significantly higher stage of disease ( $P = .013$ ). All other participants were recruited at the following hospitals and associated private offices in Switzerland, Germany, and Austria: University Hospital Zurich; Triemli Hospital Zurich; district hospitals in Schaffhausen, Solothurn, St Gallen, Winterthur, Baden, and Walenstadt; Charité Berlin; Albertinen Hospital Hamburg; Vivantes Humboldt Klinikum Berlin; University Hospital Aachen; and University Hospital Graz.

The recruitment of women diagnosed with endometriosis was carried out via direct approach of the study teams. The questionnaire was explained and information about the voluntary nature of participation as well as anonymity of reports and publications of data was provided. To take part in the study,

participants had to be aged between 18–50 years, currently not pregnant, and have no linguistic, mental, or psychological impairment that might affect the understanding and completion of the questionnaire.

Control subjects had to be either free of endometriosis-suspicious symptoms or have endometriosis excluded via laparoscopy or laparotomy. The control group was recruited through regular annual gynecological consultations or during stationary hospital stays as a result of gynecological problems other than endometriosis.

Participants were given all documents and 1 return envelope for each partner. Women with a man partner were asked to give a small questionnaire on socio-demographic status, sexuality, and partnership; an explanatory letter; and 1 return envelope to their partner. To maximize the return rate, they were reminded after 1 and 3 months. For the present study, women whose partners had returned a questionnaire were pair-matched with control women based on considerations of age ( $\pm 3$  years) and nationality. Of a total of 788 women in the endometriosis and 1411 women in the control groups, after exclusion of participants without a man partner's questionnaire or with missing data, 236 partners in each group remained for the study (Figure 1). The endometriosis stage was classified according to the criteria of the revised Classification of the American Society for Reproductive Medicine (ASRM)<sup>25</sup> based on surgical and histological reports.

**Table 1a.** Socio-epidemiologic data of men participants

	Endometriosis partners	Control partners	P value
Participants, n	236	236	
Age, mean $\pm$ SD	38.7 $\pm$ 8.2 y	38.1 $\pm$ 9.5 y	.858*
Age, median/range	38/49 y	37.5/42 y	
No. of children with current partner, mean $\pm$ SD	0.5 $\pm$ 0.8	1.0 $\pm$ 1.1	<.001*
Nationality <sup>†</sup>			.088 <sup>‡</sup>
Swiss	40.3% (n = 95)	51.3% (n = 121)	
German	49.6% (n = 117)	35.6% (n = 84)	
Austrian	1.3% (n = 3)	3.0% (n = 7)	
Other	8.9% (n = 21)	10.2% (n = 24)	
Education <sup>†</sup>			.049 <sup>‡</sup>
Graduation	30.9% (n = 73)	22.4% (n = 53)	
Vocational education	31.8% (n = 75)	34.7% (n = 82)	
Academic studies	33.1% (n = 78)	39.4% (n = 93)	
No graduation	2.1% (n = 5)	2.5% (n = 6)	
Professional activity <sup>†</sup>			.394 <sup>‡</sup>
Full time	84.3% (n = 199)	81.8% (n = 193)	
Part time	9.3% (n = 22)	7.6% (n = 18)	
Other	5.1% (n = 12)	9.4% (n = 22)	

\*Calculated by Student *t* test.

<sup>†</sup>Percentage of given answer of all answer possibilities.

<sup>‡</sup>Calculated by  $\chi^2$  test.

The questionnaire for men partners contained 33 questions on socio-epidemiologic data, partnership, and sexuality. Selected relevant questions from the Brief Index of Sexual Functioning (Q2, Q4, Q6, Q9) and the Sexual History Form (Q1, Q5, Q7, Q8, Q9, Q10, Q11) were used to investigate sexuality. Specific questions regarding endometriosis (Q3, Q12, Q13, Q14, Q15, Q16) and 1 question to measure sexual desire (Q17) were included and created by sexologists and gynecologists with vast experience in dealing with endometriosis patients. The answers were analyzed individually without computing composite scores. The Brief Index of Sexual Functioning is a questionnaire designed to measure female sexual function with Cronbach alpha

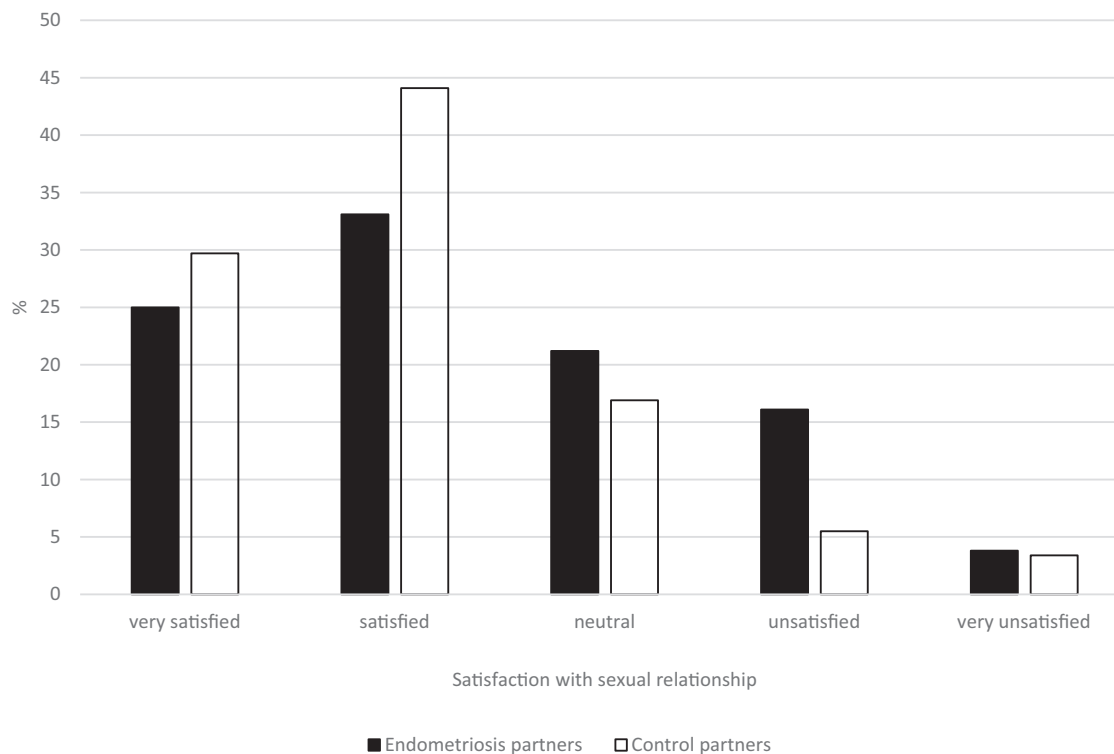
values of 0.82 and higher.<sup>26</sup> The scale has received a psychometric evaluation, including studies of reliability and validity.<sup>26,27</sup> The Sexual History Form is a widely used questionnaire to investigate sexual function, dysfunction, and satisfaction of men and women with a Cronbach alpha value of 0.65 for the men's Global Sexual Functioning.<sup>28</sup> It was originally developed to provide standardized data for diagnosis and research in sex therapy clinics and clinical studies of sex therapy outcome.<sup>29,30</sup> However, these quality criteria cannot directly be transferred to the selected questions used in the present study. The questions were formulated in a multiple-choice design and are included as [Appendix 1](#). Some questions were minimally

**Table 1b.** Socio-epidemiologic data of woman partner

	Endometriosis group	Control group	P value*
BMI, mean $\pm$ SD	22.8 $\pm$ 4.7 kg/m <sup>2</sup>	22. $\pm$ 3.8 kg/m <sup>2</sup>	.691
BMI, median/range	22/16 kg/m <sup>2</sup>	22/23 kg/m <sup>2</sup>	
Age, mean $\pm$ SD	37.1 $\pm$ 6.9 y	36 $\pm$ 8.1 y	.101
Age, median/range	37/34 y	35/33 y	
Inability to achieve desired pregnancy within 2 y	24.9% (n = 58)	5.5% (n = 13)	<.001
No. with at least some dyspareunia	32.6% (n = 77)	10.2% (n = 24)	<.001
1 of the following diseases:	0.004% (n = 1)	0.004% (n = 1)	1
$\geq$ 2 of the following diseases:	0.0% (n = 0)	0.0% (n = 0)	
polyarthritis, diabetes mellitus, HIV infection, epilepsy, history of stroke, malignant disease, other severe disease			

BMI = body mass index.

\*Calculated by Student *t* test.



**Figure 2.** Satisfaction of men partners with sexual relationship ( $P = .002$ ).

altered or use slightly different wording to minimize answer possibilities. The Cronbach alpha value for our questionnaire was 0.71 for partners of control women and 0.66 for partners of endometriosis patients.

We termed men with a woman partner diagnosed with endometriosis “endometriosis partners” (EP) and partners of women without endometriosis “control partners” (CP). Couples in which the woman partner was diagnosed with endometriosis we termed “couples with endometriosis.”

Body mass index is measured in kilograms divided by the square of the body height in meters. After each  $P$  value we included the statistical test: Mann-Whitney (MW),  $t$ , and  $\chi^2$ . To evaluate infertility, women had to report the time elapsed without achieving a desired pregnancy in 6-month intervals. Pre-selected answers for the frequency of dyspareunia consisted of “never,” “rarely,” “sometimes,” “often,” and “always.”

The MW test was used to compare multiple-choice answers. For interval-scaled answers a Student  $t$  test was used. All tests were 2-sided. For categorical data the  $\chi^2$  test was used. As multiple tests were used, instead of performing a Bonferroni correction, we set the significance level to a  $P$  value of less than .01. A  $P$  value  $\leq .03$  but  $> .01$  was interpreted as a statistical tendency. Eta squared ( $\eta^2$ ) was used for effect sizes:  $\eta^2 = 0.02$  was considered a small,  $\eta^2 = 0.13$  a medium, and  $\eta^2 \geq 0.26$  a large effect. All analyses were at the item level. To evaluate determinants of sexual satisfaction a multiple regression analysis was performed. General sexual desire, frequencies, and time invested into different sexual activities as well as disease

characteristics were entered into the model. Statistical analysis was performed using software (SPSS for Windows, Version 22.0; IBM Corp, Armonk, NY).

The study was approved by the Swiss ethics commission as well as the ethic boards of participating hospitals. All women and participating partners provided signed informed consent for study participation as well as verification of the endometriosis diagnosis through their medical charts. The study was conducted in agreement with the guidelines of the World Medical Association Declaration of Helsinki 1964, updated in October 2013.

## RESULTS

### Socio-Epidemiologic Data

Tables 1a and 1b summarize the socio-epidemiologic data of the men participants (Ia) and their women partners (Ib). Altogether, 16.5% ( $n = 39$ ) of endometriosis patients had ASRM stage I endometriosis, 25.1% ( $n = 59$ ) had ASRM stage II, 27.1% ( $n = 64$ ) had ASRM stage III, and 31.3% ( $n = 74$ ) had ASRM stage IV. At the time of the investigation, 51.7% ( $n = 122$ ) had undergone 1 operation, 34.3% ( $n = 81$ ) had been operated twice or 3 times, and 14.0% ( $n = 33$ ) women had undergone more than 3 operations.

### Sexual Satisfaction and Desire

Figure 2 shows answers on satisfaction with the sexual relationship ( $\eta^2 = 0.02$ ). A total of 25.0% of EP reported (very) strong and 50% reported small changes in sexuality due to

**Table 2.** Multiple regression analysis with “satisfaction with sexual relationship” as dependent variable (during month before answering the questionnaire) of endometriosis partners

Independent variables*	Beta	SE	P value
Satisfaction with diversity of sex life	0.411	0.045	<.001 <sup>†</sup>
Frequency of sexual intercourse	0.244	0.044	<.001 <sup>†</sup>
Frequency of pain during sexual activities	−0.270	0.037	<.001 <sup>†</sup>
Frequency of masturbating alone	−0.155	0.034	.004 <sup>†</sup>
Stage of disease	−0.110	0.051	.029 <sup>†</sup>
Frequency of kissing	0.041	0.043	.339
Frequency of oral sex	0.119	0.064	.065
Frequency of vaginal penetration from behind	0.017	0.075	.824
Frequency of petting	0.023	0.071	.749
Time of intercourse	0.047	0.054	.523
Time of foreplay	0.139	0.102	.048
General sexual desire	0.053	0.031	.089
Infertility (months trying unsuccessfully to get pregnant)	0.048	0.198	.744
No. of children	0.019	0.180	.269
Time since first diagnosis	−0.001	0.001	.102

\*All analyzed independent variables.

<sup>†</sup>Significant.

endometriosis. 25% reported no changes. The average sexual desire in the month prior to the study period was similar in both groups (EP:  $7.87 \pm 2.20$  vs CP:  $7.97 \pm 1.73$ , scale from 1–10,  $P = .919$ ,  $t$ ). Of those men with sexual limitations resulting from pain of their women partners (79.7% for EP, 44.5% for CP,  $P < .001$ , MW), EP reported a significantly stronger impact on sexual satisfaction compared to CP (very strong impact: 1.9% for CP, 7.7% for EP, strong impact: 1.9% for CP, 12.5% for EP, middle impact: 20% for CP, 19% for EP, little impact: 42.9% for CP, 39.1% for EP, no impact: 33.3% for CP, 21.7% for EP,  $P < .001$ ,  $n^2 = 0.78$ , MW). Difficulties in sex life had a significantly greater impact on relationship happiness in EP than in CP (very strong: 0.7% for CP, 2.7% for EP, strong: 1.1% for CP, 10.8% for EP, middle: 2.9% for CP, 19.5% for EP, little: 2.4% for CP, 25% for EP, not at all: 92.9% for CP, 42% for EP,  $P < .001$ ,  $n^2 = 1$ , MW). Table 2 shows associations between specific factors of sexual activity and satisfaction with the sexual relationship.

### Sexual Activity and Frequency of Sexual Activities

Figure 3 gives a summary on frequency of sexual activities and some qualitative aspects regarding the month prior to the survey. The effect size for the difference in sexual activity was 0.01. Table 3 summarizes potential influences of medical and surrounding conditions on the frequency of sexual activities. Table 4 shows frequencies of different sexual activities in the month prior to completing the questionnaire.

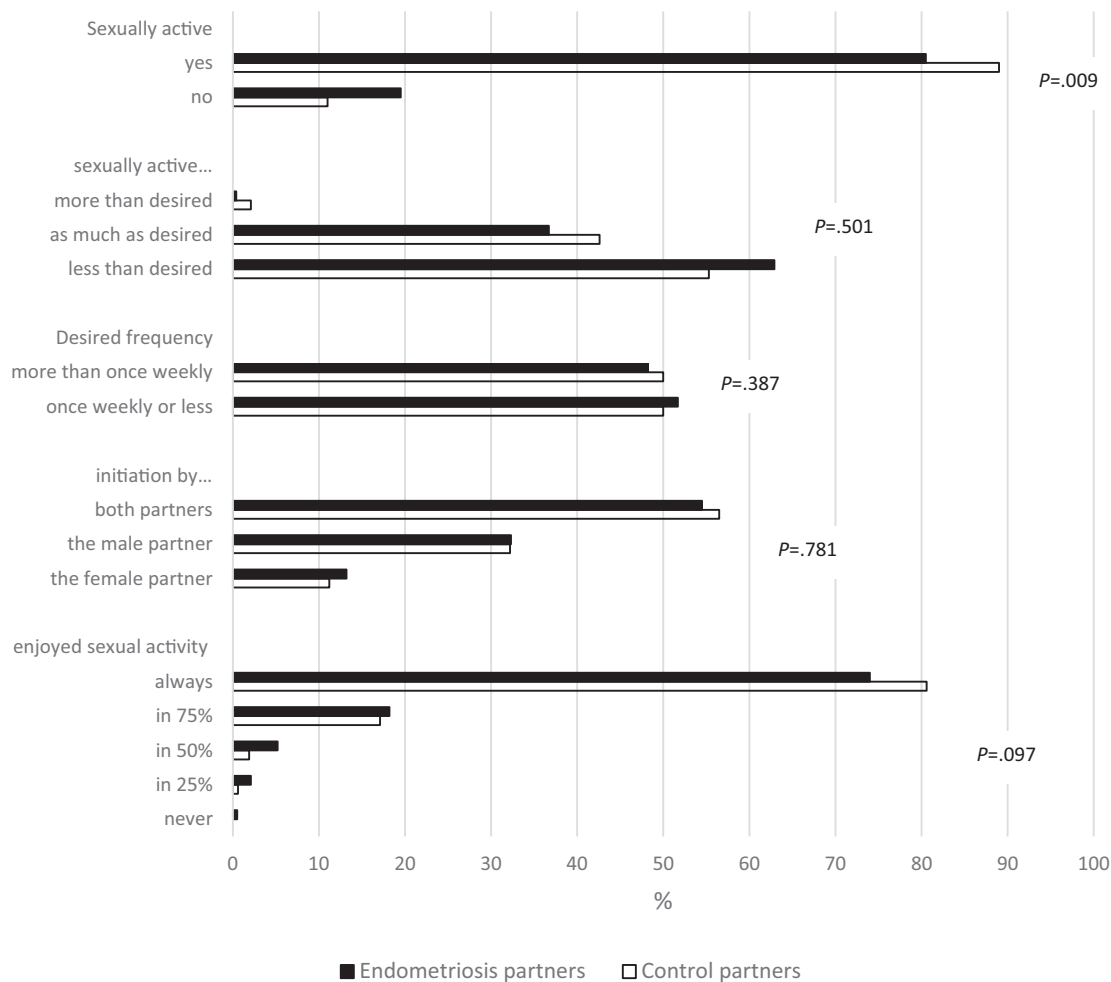
### Sexual Limitations and Dyspareunia

More often in EP than in CP, pain was reported to generally impair sexual activities at least “sometimes” (never: EP 18.8% and CP 35.3%, rarely: EP 35.8% and CP 45.5%, sometimes: EP

27.1% and CP 16.2%, usually: EP 6.1% and CP 1.3%, always: EP 12.2% and CP 1.7%,  $P < .001$ ,  $n^2 = 0.1$ , MW). A majority of men in both groups reported “petting” (EP 79.4% vs CP 81.1%,  $P = .819$ , MW), the “missionary position” (EP 72.3% vs CP 77.2%,  $P = .700$ , MW), “woman on top” (EP 65.5% vs CP 75.3%,  $P = .128$ , MW), the “spoon position” (EP 66.8% vs CP 74.8%,  $P = .425$ , MW), and “vaginally from behind” (EP 57.9% vs CP 67.9%,  $P = .202$ , MW) to be at least sometimes possible despite dyspareunia. About 28.8% of EP and 16.5% of CP ( $P = .632$ , MW) reported that their partner had sexual intercourse at least sometimes despite experiencing pain in order to not jeopardize the relationship.

### Reactions and Solutions to Sexual Difficulties

When asked about options to overcome sexual limitations and/or dyspareunia, 24.2% of EP and 49.6% of CP ( $P < .001$ ,  $n^2 = 0.62$ , MW) reported that there were no limitations. The answers given by men regarding what helps most when dealing with limitations or pain of their partner (74.8% for EP, 41.8% for CP,  $P < .001$ , MW) were “open communication about critical positions or movements” (57.3%) followed by “nothing” (17.8%), “adaptation of positions” (14.8%), and “other things” (10%) for EP and “open communication about critical positions or movements” (61.9%), followed by “adaptation of positions” (17.9%), “other things” (11.9%), and “nothing” (8.3%) for CP ( $P = .106$ , MW). To remain “accepting and understanding” was reported to be the most common reaction of the woman partner in face of difficulties during intercourse by both groups (EP 69.6%, CP 81.1%). 10.2% of EP declared their most typical reaction to be “frustrated or annoyed,” 10.2% were “anxious and blaming self,” and 9.9% were “neutral or uncaring.” For CP the referring numbers were 6.9%, 6%, and 6% ( $P = .072$ , MW).



**Figure 3.** Sexual activity and frequency of sexual activities (regarding the month prior to the survey).

## DISCUSSION

### Sexual Satisfaction of Men Partners

Almost all EP reported changes in sexuality following the endometriosis diagnosis of their partner, which is in accordance with findings on the impact of endometriosis on women's sexuality<sup>6,10</sup> and confirms that endometriosis can affect the sexuality of both partners.

Other studies have described negative impacts of endometriosis-associated symptoms on sexual satisfaction.<sup>6,31</sup> As can be expected from such negative impacts, one of the main findings of this study is that EP are less satisfied with their sexual relationship than CP, although the majority of EP is not unsatisfied (Figure 2). The small effect size supports the conclusion that sexual satisfaction is only impaired in some EP. A previous study does not support our finding, but includes only a very small number of men ( $n = 26$ ).<sup>21</sup> This study shows that EP enjoyed sexual activities as often as CP and, unlike partners of women with gynecological cancer, they showed no reduced desire,<sup>3</sup> thus not providing indicators for diminished satisfaction. To provide solutions for a satisfactory sex life with a partner with endometriosis it is therefore important to identify factors that lead to such sexual dissatisfaction. The

frequency of sexual intercourse, frequency of pain during intercourse, and the satisfaction with diversity of sex life are associated with sexual satisfaction (Table 2). As the satisfaction with diversity of sex life may be part of general sexual satisfaction, the change in sexual satisfaction may partly be due to reduced frequency and a higher amount of dyspareunia, which would be in agreement with literature.<sup>6,19</sup> However, not all EP experience sexual dissatisfaction: 55% reported to be (very) satisfied. Around two thirds of the women diagnosed with endometriosis rarely experience dyspareunia. Interestingly, the number of women reporting dyspareunia at least sometimes is different from the men's answer regarding pain interfering with sexual activities sometimes or more (CP 19.2% vs 10.2% and EP 45.4% vs 32.6%). The different wording might explain part of the difference. However, men might not always be aware of their partners' dyspareunia or women partners might pretend not to experience it. Eventually, such behavior makes it harder to discuss dyspareunia. Some couples having to deal with endometriosis may communicate more openly about how to adapt their sexuality to their needs. Finding solutions to integrate endometriosis-related limitations into other aspects of daily life might increase the quality of the relationship and consequently also partnered sexuality. Partners have been

**Table 3.** Factors influencing frequency of sexual activity in couples dealing with endometriosis and controls

	Endometriosis partners, %/n	Control partners, %/n	P value* + effect size <sup>†</sup>
My own health problems (infections, diseases) <sup>‡</sup>			.795
Absolutely not	66.5%/157	62.7%/148	
Rarely	14.8%/35	17.8%/42	
Sometimes	13.6%/32	11.4%/27	
Usually	2.5%/6	5.5%/13	
Always	2.5%/6	2.5%/6	
Median	Absolutely not	Absolutely not	
Health problems of my partner <sup>‡</sup>			<.001 n <sup>2</sup> = 0.07
Absolutely not	25%/59	47%/111	
Rarely	21.6%/51	24.2%/57	
Sometimes	28.4%/67	17.8%/42	
Usually	16.1%/38	7.2%/17	
Always	8.9%/21	3.8%/9	
Median	Sometimes	Rarely	
Conflicts in relationship <sup>‡</sup>			.417
Absolutely not	43.9%/100	45.8%/108	
Rarely	33.9%/78	31.4%/74	
Sometimes	13.1%/32	14.8%/35	
Usually	5.9%/16	5.1%/12	
Always	3.2%/10	3%/7	
Median	Rarely	Rarely	
Missing privacy <sup>‡</sup>			.003 n <sup>2</sup> = 0.02
Absolutely not	64.4%/152	50%/118	
Rarely	17.8%/42	21.2%/50	
Sometimes	8.5%/20	18.6%/44	
Usually	5.1%/12	7.6%/18	
Always	4.2%/10	2.5%/6	
Median	Absolutely not	Absolutely not	
Other factors <sup>‡</sup>			.887
Absolutely not	62.3%/96	54.6%/89	
Rarely	14.9%/23	14.7%/24	
Sometimes	13.0%/20	20.2%/33	
Usually	6.5%/10	8.0%/13	
Always	3.2%/5	2.5%/4	
Median	Absolutely not	Absolutely not	

Percentage of given answer of all answer possibilities.

\*Calculated by Mann-Whitney test of all given answers (1–5).

<sup>†</sup>Given for significant results.

<sup>‡</sup>All possible response options are presented as in the questionnaire.

identified as a valuable support when adjusting life to consequences of a chronic disease.<sup>14</sup>

### Sexual Activity and Frequency of Sexual Activities

All frequencies of partnered sexual activities were lower for EP than CP, which is another main finding of this study (Tables 2 and 3). Comparable results for the general frequency of sexual activities without further details on different activities have been found in other chronic pain diseases.<sup>32–34</sup> Although CP showed a higher frequency of sexual activities, a comparable number of men

partners in both groups would have preferred a higher frequency of sexual intercourse than in their present situation and no differences in the frequency of initiation of sexual activities were reported (Figure 3). The higher frequencies reported by CP do not seem to lead to higher satisfaction with the frequency of sexual intercourse. Reduced frequency of sexual contacts may have different reasons in both groups. While endometriosis-related symptoms will likely explain part of the situation in EP, a lack of privacy, possibly due to a higher number of children,<sup>35</sup> had a significantly stronger influence on the frequency of sexual activities than in CP (Table 4). In



**Table 4.** Frequency of sexual activities in the month prior to the study and satisfaction with diversity of sex life

	Endometriosis partners, %/n	Control partners, %/n	<i>P</i> value* + effect size <sup>†</sup>
Kiss			.475
Never	4.4%/10	3.0%/7	
Once	1.8%/4	0.4%/1	
2–3 times	3.9%/9	3.4%/8	
Once/wk	1.75%/4	4.7%/11	
2–3 times/wk	12.7%/29	11.1%/26	
Once/d	21.1%/48	20.0%/47	
More than once/d	54.4%/124	57.4%/135	
Median	More than once/d	More than once/d	
Masturbating alone			.063
Never	36.0%/80	24.7%/58	
Once	13.1%/29	14.0%/33	
2–3 times	11.7%/26	17.0%/40	
Once/wk	16.2%/36	18.3%/43	
2–3 times/wk	17.1%/38	23.4%/55	
Once/d	3.6%/8	1.3%/3	
More than once/d	2.5%/5	1.3%/3	
Median	2–3 Times	2–3 Times	
Petting			.008 $n^2 = 0.02$
Never	64.7%/143	50.6%/117	
Once	11.3%/25	15.6%/36	
2–3 times	11.3%/25	18.6%/43	
Once/wk	5.9%/13	10.8%/25	
2–3 times/wk	6.3%/14	3.9%/9	
Once/d	0.5%/1	0.4%/1	
More than once/d	0%/0	0%/0	
Median	Never	2–3 Times	
Oral sex			.016 $n^2 = 0.01$
Never	49.8%/112	17.7%/41	
Once	19.1%/43	13.8%/32	
2–3 times	13.8%/31	20.3%/47	
Once/wk	11.1%/25	22.4%/53	
2–3 times/wk	4.9%/11	22.8%/53	
Once/d	0.9%/2	2.2%/5	
More than once/d	0.4%/1	0.9%/2	
Median	once	2–3 times	
Vaginal penetration in missionary position			.003 $n^2 = 0.2$
Never	23.9%/54	12.7%/98	
Once	11.1%/25	11%/32	
2–3 times	23.5%/53	19.9%/46	
Once/wk	18.6%/42	28%/39	
2–3 times/wk	19.5%/44	24.2%/18	
Once/d	2.7%/6	3.4%/1	
More than once/d	0.9%/2	0.8%/1	
Median	2–3 Times	Once/wk	
Vaginal penetration from behind			<.001 $n^2 = 0.04$
Never	73.9%/164	53.8%/127	
Once	9.9%/22	16.5%/39	
2–3 times	8.6%/19	10.6%/25	
Once/wk	5.0%/11	12.7%/30	
2–3 times/wk	2.6%/5	5.1%/12	

(continued)

Table 4. Continued

	Endometriosis partners, %/n	Control partners, %/n	<i>P</i> value* + effect size <sup>†</sup>
Once/d	0.5%/1	1.3%/3	
More than once/d	0%/0	0%/0	
Median	Never	Never	
Satisfaction with diversity of sexual activities in sex life			.032
Extremely satisfied	60.9%/142	73.0%/170	
Moderately satisfied	15.0%/35	15.5%/36	
Little satisfied	4.3%/10	1.7%/4	
Little unsatisfied	1.7%/4	0.4%/1	
Moderately unsatisfied	0.4%/1	0%/0	
Extremely unsatisfied	17.6%/41	9.4%/22	
Median	Extremely satisfied	Extremely satisfied	

Percentage of given answer of all answer possibilities.

\*Result of Mann-Whitney test of all given answers.

<sup>†</sup>Given for significant results.

addition, irrespective of any diseases, men often desire a higher frequency of sexual contacts than their women partners.<sup>23</sup> Interestingly, even though the frequency of partnered sexual activities was lower, EP did not masturbate more often than CP and the affectionate level of the relationship (as represented by kissing) showed no difference in the 2 groups. The continued high desire and the missing increase in masturbation may reflect the wish for an ongoing emotional and sexual relationship of EP with their partner, as men usually substitute masturbation for lower frequencies of sexual activity.<sup>23</sup> Future research could further evaluate this finding in order to better understand the men's perspective.

### Challenges Faced by Couples Experiencing Endometriosis

The main challenges that couples experiencing endometriosis have to cope with seem to be a reduced frequency of sexual activities and dyspareunia. Other challenges such as fatigue and chronic pelvic pain were not considered in our study but should be addressed in future research as they seem to alter sexual satisfaction and thus represent important targets for sexual counseling.<sup>9,36,37</sup> The reduced frequencies of sexual activity likely have to be attributed to endometriosis-associated pain, especially dyspareunia, which—in agreement with our findings and the large effect sizes—is known to result in a reduction of frequency and variety of positions during sexual intercourse.<sup>8,36,38</sup> As can be expected, dyspareunia was more common in the women partners of EP. Not only in comparison to EP but also in comparison to other studies, CP experienced little limitations of sexual activities due to dyspareunia.<sup>38</sup> One third of women with endometriosis-associated dyspareunia has to interrupt intercourse frequently or almost always, and another third rarely.<sup>6</sup> Positions of sexual intercourse may strongly influence dyspareunia. Penetration from behind is generally deeper than in the missionary position and is consequently associated with an increased risk for dyspareunia.<sup>39,40</sup> Positions in which women control the depth of

penetration help to avoid or reduce dyspareunia.<sup>41</sup> In agreement with this observation, only 26.1% of EP compared to almost half of CP had sexual intercourse from the rear position. Vaginal penetration in the missionary position was the highest partnered sexual activity of EP (except for kissing). This might also reflect that it is perceived to be the easiest way to fulfill the (anticipated) sexual wish of a man partner.<sup>8</sup> However, although the frequency of this sexual position was the highest in EP, the frequency itself was still low compared to the general population and CP.<sup>42</sup> So even though the majority of both groups estimated any sexual position to be possible, endometriosis is related to the choice of position. Evaluation of causal effects should be addressed in future research.

Frequencies related to dyspareunia were not only different in sexual intercourse, but also in petting and oral sex. The experience of dyspareunia can lead couples to focus on pain instead of enjoyment during sexual intercourse.<sup>13</sup> This may result in a general reduction of sexual desire, especially in the woman partner.<sup>33</sup> Women may also refrain from initiating sexual contacts because they fear the risk of (another) frustrating situation or that their partner expects them to have intercourse although they would prefer either petting or oral sex. Both apprehensions might result in avoidance of sexual contacts, a known consequence of sexual problems.<sup>20,43</sup> This is in agreement with our finding that 28.8% of EP and 16.5% of CP reported that their partner had at least sometimes sexual intercourse despite experiencing pain, in order not to jeopardize the relationship. To investigate this point further, future studies could include same-sex couples, as non-penetrative sexual activities are more frequent in lesbian couples when compared to mixed-sex couples.<sup>23</sup> While endometriosis has repeatedly shown to decrease sexual activity,<sup>6,9,31</sup> this still might lead to an assumption of the man partner to automatically make endometriosis responsible for all kinds of sexual dysfunctions.<sup>44</sup> Infertility, one of the main symptoms of endometriosis, is associated with sexual dysfunctions such as dyspareunia, vaginismus, and loss of sexual desire,<sup>45</sup> but according to our results seems not to be associated with sexual satisfaction.

## Target Options for Improvement of Partnership Sexuality With Endometriosis

Personal and social factors, the context in which sexuality takes place, and communication about sexual needs are determinants of sexual satisfaction.<sup>46,47</sup> Partners in our study reported communication about sexual difficulties to be an important strategy to overcome sexual problems, but lack of adequate communication about sexual needs is more prevalent in couples with endometriosis.<sup>31</sup> As EP experienced a stronger impact of reduced sexual satisfaction on their partnership happiness than CP, improvement of communication is of particular importance. Sexual counseling of couples with endometriosis should address factors influencing sexual satisfaction, eg, the frequency of sexual intercourse and pain during sexual activities, as well as potentially pain-free sexual activities and satisfaction with the variety of sexual activities. A multidisciplinary approach has been used to positively influence pain of patients with chronic sexual pain secondary to provoked vestibulodynia.<sup>48</sup> Such psychological support of patients with dyspareunia has also shown positive effects on the psychological health of their partner.<sup>49</sup> Sexual counseling should, therefore, also be part of the medical support in endometriosis. The ASRM stage only correlated weakly with sexual satisfaction of EP, which is in agreement with the ASRM stage's weak correlation with disease symptoms.<sup>39</sup> All patients with endometriosis might therefore benefit from a screening for difficulties in partnered sexual activities, as 20% of women partners of EP blamed themselves or were frustrated when faced with difficulties during sexual intercourse. Especially these couples should be encouraged to use the full spectrum of sexual activities, with a goal to replace painful activities with pain-free ones (eg, oral sex or petting) and to avoid secondary sexual disorders such as a loss of sexual desire or avoidance of partnered sexual contacts despite sexual desire. Future studies could focus on qualitative aspects of sexual activities of CP in order to further identify factors that lead to sexual dissatisfaction.

## Strengths and Limitations

To the best of our knowledge, this is the first study to examine in such detail the man's perspective on partnership sexuality of couples experiencing endometriosis. The high number of participants and the multi-centered, matched case-control design are important strengths. Recruiting patients in gynecological clinics allowed us to reach couples who would likely not have taken part in a study about sexuality otherwise. The unselected sample of women with endometriosis reflects the population gynecologists see in their consultations. The meticulous verification of diagnosis and disease stage according to operation reports and histology allow for a high reliability of diagnosis, however, we cannot exclude that some women with asymptomatic endometriosis may be part of the control group. As dyspareunia is the main endometriosis-related symptom interfering with sexuality, it is unlikely that such false classification would modify our results. Regarding the inclusion criteria, we focused on the woman partner. Socio-epidemiologic data of the men groups showed no difference; however, we did not consider the health background

or specific sexual disorders of partners, which might bias our finding. However, health limitations in men partners were likely present in both groups. With 48.8% in the endometriosis and 46.8% in the control group, our response rate of men partners is considerably higher than in another study about the men's perspective on life with endometriosis, where only 32% of men partners completed the survey.<sup>19</sup> A relatively large number of questionnaires had to be excluded due to incompleteness, which is probably linked to the intimate nature of the questions. We worked with selected questions and consequently did not compute composite scores of the 2 validated questionnaires, whereby the Brief Index of Sexual Functioning has only been validated for women. The use of some investigator-derived questions to adjust for the specific situation of endometriosis may be a limitation of this study. However, to ensure a high quality of our questionnaire and high relevancy of our questions we worked with sexologists and gynecologists with a strong clinical and scientific expertise in endometriosis and sexual medicine. Although some qualitative aspects have been addressed, further details on partnership interaction when adjusting for endometriosis-related symptoms in sexual activity would be beneficial to better understand the impact of this disease on partnership sexuality. Further research is needed to include the perspective of same-sex couples, which was not the focus of the present article. As women asked their partners for study participation, we cannot exclude selection bias.

## CONCLUSION

Although EP are less sexually satisfied than CP, the majority of EP and CP is satisfied with their sexual activity. The frequencies of sexual intercourse as well as other partnered sexual activities are reduced in couples affected by endometriosis while the desire for sexual activity does not vary between EP and CP. Therefore, couples with difficulties in partnered sexual activities should receive sexual counseling for both the man and the woman partner as well as support to communicate sexual needs and to use the full spectrum of sexual activities, enabling couples to develop a fulfilling sexual life despite endometriosis.

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#### SUPPLEMENTARY DATA

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