

Impact of stress urinary incontinence on female sexual activity

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Abstract. – **OBJECTIVE:** The study aimed to investigate the impact of SUI (Stress Urinary Incontinence) on the sexual activity of women, to assess their sexual functioning, and to show the extent of the problem that SUI poses to the quality of life of women.

PATIENTS AND METHODS: The study involved 70 women aged 20-48 years. The inclusion criteria included the presence of stress urinary incontinence, the sexual activity of the women, and the history of no urogynecological intervention. The authorial questionnaire and the Polish version of the Female Sexual Function Index (FSFI) were used.

RESULTS: SUI contributes to reducing the frequency of intercourse and even complete resignation from sexual intercourse. There is a correlation between the occurrence of urinary leakage during intercourse and the occurrence of sexual dysfunction ($p=0.023$). The most common factors limiting sexual activity are decreased libido, fatigue, lack of desire, and lack of body acceptance. However, age ($p=0.070$), marital status ($p=0.091$), Body Mass Index (BMI) ($p=0.436$), as well as the duration of stress urinary incontinence ($p=0.36$) have no effect on women's sexual activity. The most common ways of dealing with the loss of urine during intercourse include micturition before intercourse, intercourse only in safe places, restriction of physical activity during intercourse, and reduction of intercourse frequency and duration.

CONCLUSIONS: SUI in women has a significant effect on their sexual activity. The cause of this state of affairs is multifactorial. Some wom-

en try to cope with the problem and have developed a number of strategies that allow them to be sexually active without unpleasant surprises.

Key Words:

Stress urinary incontinence, Incontinence during intercourse, Sexual dysfunction.

Introduction

Stress urinary incontinence (SUI) constitutes a serious health problem in modern society. It significantly restricts or even impairs functioning on many levels of women's life, including their sex life¹⁻⁴.

Sexuality plays a meaningful role at different stages of women's life. Still, at every one of them, it is supposed to bring pleasure, enjoyment, fulfillment, and satisfaction. Unfortunately, loss of urine during sexual intercourse, to a large extent, does not allow that. The fear of urine leakage itself very often leads to resignation from sexual activity. Women start to feel less feminine, and thus less sexually attractive or even useless. It results in distorted views of their own bodies, negatively influences their mental health, and may translate into worse relations with their partners^{1,5-7}.

Urinary incontinence during sexual intercourse may also contribute to the occurrence of female sexual dysfunction (FSD), concerning four major

categories: sexual desire, arousal, orgasm, and pain disorders^{2,5,8,9}.

The presented article aimed to evaluate the influence of SUI on women's sexual activity, sexual functioning, and quality of life. Additionally, the dynamic of changes in their sexual behavior related to SUI occurrence was analyzed as well as determinants of sexual activity in patients afflicted with SUI.

Materials and Methods

The study was conducted among female patients of the Gynecology and Obstetrics Ward of the Kornel Gibiński Central Clinical Hospital in Katowice and the Gynecology and Obstetrics Ward with Gynecological Oncology Subward of the MEGREZ Sp. z o.o. [Ltd.] Voivodship Hospital Complex in Tychy, after obtaining written consent from directors of both hospitals. Part of the study was also carried out in physiotherapeutic offices specializing in the subject of urogynecology located in Katowice, Zabrze, Gliwice, Kraków, and Łódź. The study was conducted between March and May 2017.

The Bioethics Commission of the Medical University of Silesia gave an opinion that the presented study is not a medical experiment, and the evaluation of the Bioethics Commission is not required (KNW/0022/KB/59/17).

The inclusion criteria into the study group were as follows: the occurrence of the stress urinary incontinence diagnosed by a gynecologist or a urologist, undertaking sexual activity in the past, condition prior to surgical treatment of stress urinary incontinence, and age above 18 years. Exclusion criteria were as follows: occurrence of chronic diseases like diabetes, hypertension, neurological disorders, lesser pelvis trauma, previous urogynecological and gynecological surgeries (except caesarean sections), previous lumbosacral spine surgeries, current lower urinary tract infection, hormonal treatment within the last six months prior to the study. Patients who did not undergo hormonal treatment at all or have been continuing such therapy for at least six months prior to the study were eligible for the study.

The study was carried out using the Polish version of the Female Sexual Function Index (FSFI) and the diagnostic poll method in which surveying was the technique, and the authorial questionnaire was the measurement tool.

FSFI questionnaire is a multidimensional measurement tool used to evaluate the sexual func-

tioning of women in the last four-week period. It contains 19 questions covering six aspects of sexuality: desire (I), arousal (II), lubrication (III), orgasm (IV), satisfaction (V), and pain (VI). Results are obtained separately for each aspect by adding scores of items assigned to each of 6 sexuality domains and multiplying the sum by an appropriate factor (0.6; 0.3; 0.3; 0.4; 0.4 and 0.4 for aspects I-VI, respectively), which gives the final score in a range of 0 to 6 points. The higher the number of points, the better is sexual functioning in a given domain. Further analysis of results involves the global FSFI score, which is expressed in punctuation ranging from 2 to 36 points. Clinically significant sexual dysfunction is recognized when the score is equal to 26.5 points or less¹⁰.

Sexual dysfunctions are understood as disorders that prevent women from engaging in sexual relations in the way they desire. These dysfunctions concern the aforementioned aspects of sexuality¹¹.

All domains of the PL-FSFI demonstrated satisfactory internal consistencies, with Cronbach's α -value of >0.70 for the entire sample. The test-retest reliability showed a good-to-excellent agreement between the assessment points. Based on the principal component analysis, a 5-factor model was established that explained 83.62% of the total variance. Domain intercorrelations of the PL-FSFI ranged from 0.37-0.77. The optimal PL-FSFI cutoff score was 27.50, with 87.1% sensitivity and 83.1% specificity¹².

The authorial questionnaire consisted of 20 questions and was divided basically into two main sections. The first section involved questions on patients' sociodemographic data, including their age, marital status, education level, and place of residence. Additionally, a question regarding patients' height and weight was included. The second section of the questionnaire contained questions on the problem of SUI itself (duration time, amount of time since first symptoms to visit with a specialist), its influence on women's sexual life (sexual activity or inactivity, frequency, and determinants), the presence or lack of urinary leakage during intercourse (including time or sexual position of its appearance), accompanying fears and strategies to cope with urinary incontinence during sexual intercourse.

Patients completed the FSFI questionnaire and the authorial questionnaire before the gynecological or physiotherapeutic consultation in institutions where this study was conducted. Women who were not sexually active at the moment of completing the questionnaires in this study, when

answering questions on sexual activity, were referring to their past sexual activity.

The questionnaires and research methodology were discussed with the psychologist. During the study, he supervised the researchers and the results of questionnaires. Researchers, when needed, submitted patients and their partners for his consultation. Eventual further psychologic treatment was not the objective of this study.

Data obtained were analyzed using Microsoft Excel and Statistica (Statistica 12, StatSoft, Poland) Software. Descriptive statistics were performed, and the results were given as means \pm SD. The data were not normally distributed. As a result, the U Mann-Whitney test was used in statistical analysis to determine differences between both groups in quantitative variables. Analysis of rates and proportions between the variables on nominal scales was performed using Pearson's chi-squared test with Yate's correction when needed. In turn, for less numerous groups, Fisher's exact test was used. Statistical significance was assumed at a p -value <0.05 .

Results

Seventy women took part in the study, and their mean age was equal to 32.7 ± 6.6 (20-48). More than half of the respondents were below the

age of 33. The detailed characteristics of the study group are presented in Table I.

No connection was found between sexually active and currently sexually inactive women in terms of time in months from the occurrence of SUI to the time of the study ($p=0.36$).

Studied women, both active ($N=59$; $M=32.02$; $SD=6.50$) and currently sexually inactive ($N=11$; $M=36.45$; $SD=6.11$) did not differ significantly in terms of their age ($p=0.070$).

No influence of BMI on women's sexual activity was observed. Sexually active ($N=59$; $M=23.25$; $SD=4.25$) and currently sexually inactive respondents ($N=11$; $M=23.82$; $SD=3.87$) did not differ significantly in regard to their BMI ($p=0.436$).

As the most common cause of sexual inactivity, women who are currently sexually inactive indicated decreased libido and lack of desire. The detailed distribution of responses is presented in Figure 1.

The frequency of sexual activity (during the time of sexual activity) differed among examined women. Respondents most frequently ($N=25$; 35.7%) indicated having sexual intercourse 'several times a week'. All responses are presented in Figure 2.

In response to question 8: 'Did you use to be more sexually active before the occurrence of the disease?', the respondents most frequently ($N=33$; 47.1%) answered 'yes.' 37.1% of women ($N = 26$) responded 'I don't see any difference' and only 15.7% ($N = 11$) answered 'no.'

Table I. Characteristics of examined women.

	Answers	Number of respondents	% of respondents
Marital status	single/unmarried	17	24.3%
	married	49	70%
	divorced	4	5.7%
	widowed	0	0%
Duration time of SUI	from 0 to 6 months	8	11.4%
	from 6 to 12 months	5	7.1%
	from 12 to 24 months	13	18.6%
	longer than 24 months	44	62.9%
Amount of time since first symptoms to visit with a specialist	from 0 to 6 months	13	18.6%
	from 6 to 12 months	6	8.6%
	from 12 to 24 months	8	11.4%
	longer than 24 months	8	11.4%
	I haven't sought a specialist's help	35	50%
Actual sexual activity	yes	59	84.3%
	no	11	15.7%

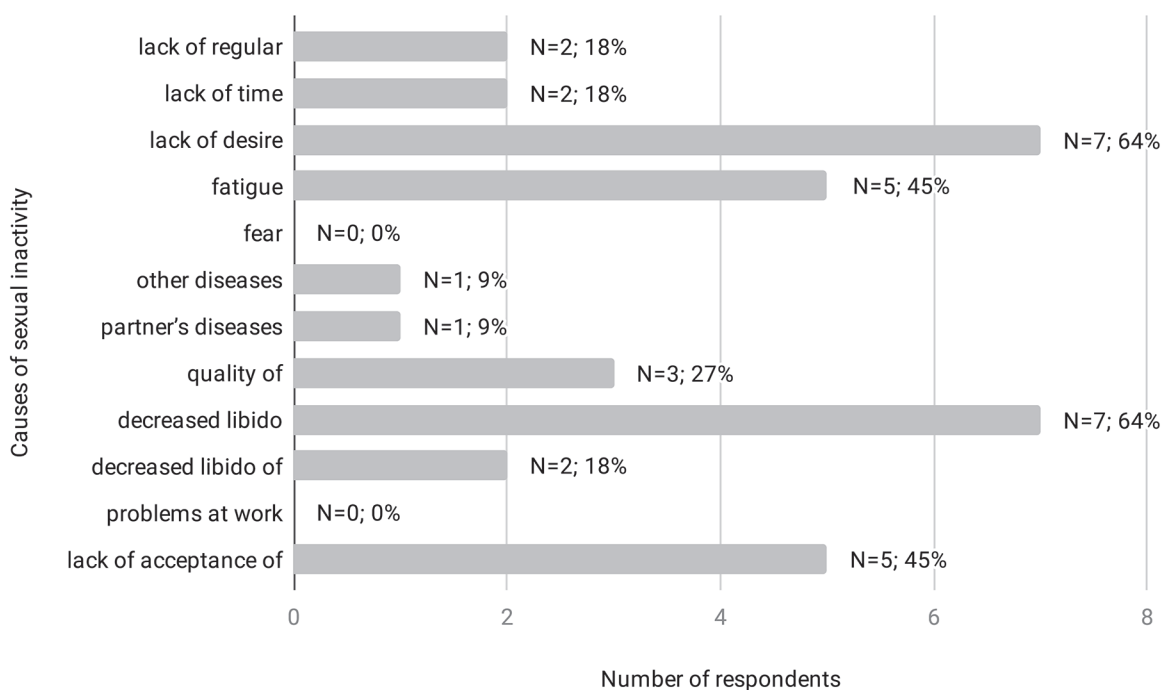


Figure 1. Causes of sexual inactivity in women with SUI.

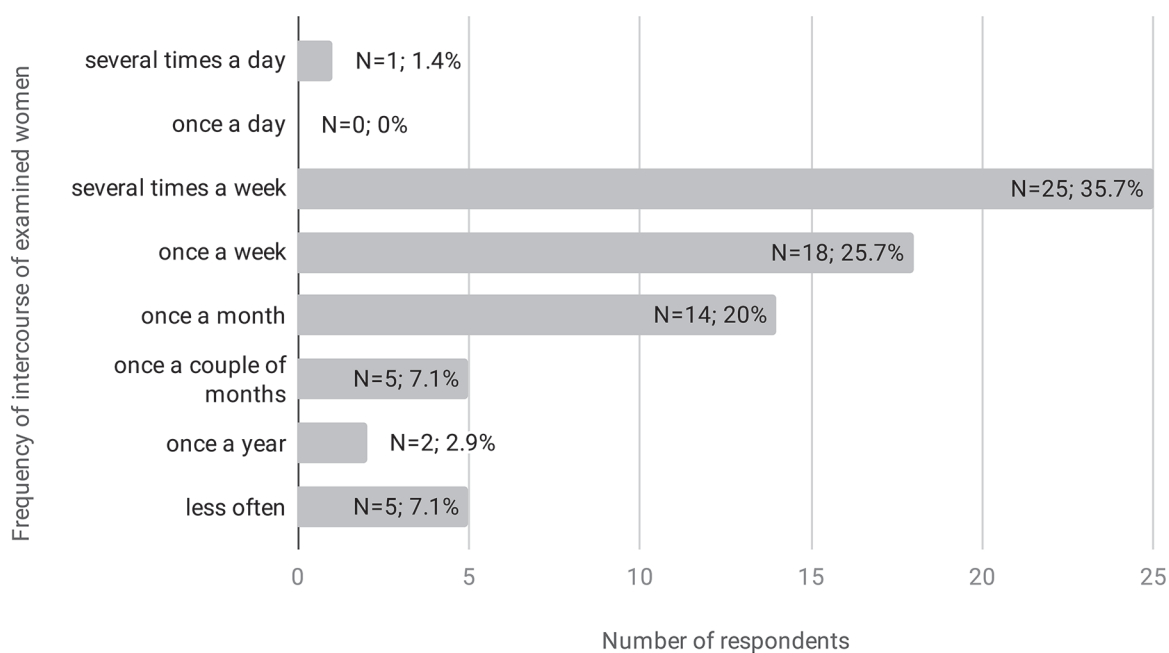


Figure 2. Frequency of intercourse (during the time of sexual activity) of examined women.

Women were also asked about their satisfaction with the sexual intercourse frequency. There was also a question about the occurrence of urine leakage during intercourse and limiting sexual

activity due to anxiety related to it. Answers of respondents are presented in Table II.

Women declaring urine leakage during sexual intercourse (N=17; 24.3%) responded that it most

Table II. Characteristics of sexual activity of the studied women.

	Answers	Number of respondents	% of respondents
Satisfaction from the frequency of sexual intercourses	yes	34	48.6%
	no	36	51.4%
Urine leakage during the intercourse	yes	17	24.3%
	no	53	75.7%
Limited sexual activity due to anxiety related to urine leakage during the intercourse	yes	11	64.7%
	no	6	35.3%
	from 12 to 24 months	13	18.6%
	longer than 24 months	44	62.9%
Amount of time since first symptoms to visit with a specialist	from 0 to 6 months	13	18.6%
	from 6 to 12 months	6	8.6%
	from 12 to 24 months	8	11.4%
	longer than 24 months	8	11.4%
	I haven't sought a specialist's help	35	50%
Actual sexual activity	yes	59	84.3%
	no	11	15.7%

frequently occurred during penetration (N=6; 35%) and both penetration and orgasm (N=6; 35%). Loss of urine during orgasm occurred only in the case of 29% of respondents (N=5).

Among the respondents, urine leakage occurred most frequently during intercourse in the missionary position (N=13; 76%). The detailed distribution of responses is presented in Figure 3.

Analysis of the FSFI questionnaire according to the key allowed to evaluate the sexual functioning of women in 6 domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. In order to compare currently sexually active women with women without current sexual activity (that were

sexually active in the past), the U Mann-Whitney test was performed (Table III).

Statistically significant differences were observed for every FSFI domain. Currently sexually active women obtained higher results than currently sexually inactive women. Mean values were presented in Table III. Moreover, the evaluation of the global FSFI score allowed to diagnose sexual dysfunction in surveyed women (score \geq 27.5). Among 70 respondents, sexual dysfunction was observed in the case of 53% (N=37). The remaining 47% (N=33) of women did not display signs of sexual dysfunction. Among women with sexual dysfunction (N=37; 53%), the domain of

Table III. Evaluation of the sexual domains of active and currently sexually inactive women.

	Are you sexually active?				U Mann-Whitney test statistics
	no (n=11)		yes (n=59)		
	M	SD	M	SD	p
FSFI desire	2.78	1.68	3.81	1.22	0.035
arousal	2.05	2.19	4.65	1.15	0.001
lubrication	2.05	2.41	5.05	1.29	<0.01
orgasm	1.35	2.12	4.05	1.74	0.001
satisfaction	2.18	1.51	4.68	1.17	<0.01
pain	0.87	1.94	5.08	1.44	<0.01
global FSFI score	11.27	10.42	27.33	5.58	<0.01

M – mean; SD – standard deviation.

Table IV. Distribution of the most and least affected FSFI domains.

FSFI domain	The most affected domain of sexual functioning		The least affected domain of sexual functioning	
	Number of respondents	% of respondents	Number of respondents	% of respondents
Desire	10	27%	7	19%
Arousal	4	11%	4	11%
Lubrication	4	11%	11	30%
Orgasm	22	59%	0	0%
Satisfaction	2	5%	7	19%
Pain	13	35%	13	35%

sexual functioning that was most affected (the one with the lowest score among all the domains) was ‘orgasm’ (N=22; 59%). The domain that was least affected (the one with the highest score) was ‘pain’ (N=13; 35%). The distribution of the most and least affected FSFI domains was presented in Table IV.

There is a correlation between the occurrence of urinary leakage during intercourse and the occurrence of sexual dysfunction ($p=0.023$). In order to examine it, statistics were calculated using the chi-squared test with Yate’s correction for continuity for tables 1 x 1 and Fisher’s exact test for less numerous groups in a cross table (Table V).

Decreased libido, fatigue, lack of desire, and lack of acceptance of their body images are the most common factors limiting the sexual activity of women with loss of urine during sexual intercourse. Detailed results are presented in Figure 4.

Accompanying fears and concerns also influence the sexual activity of examined women. The most common concerns among surveyed patients (with loss of urine during sexual intercourse) be-

fore undertaking sexual activity were the fear of not fulfilling partner’s expectations (N=8; 22%), followed by embarrassment of their bodies (N=7; 19%), fear of having to stop the intercourse (N=6; 17%) and sense of unattractiveness (N=6; 17%).

There is no correlation between undertaking sexual activity and respondents’ marital status (chi-square test, $p=0.091$). Women of different marital status did not differ in terms of the occurrence or lack of sexual activity, although sexually active were 18/21 of singles/divorced and 41/49 of married women Chi-squared (2) = 4.805; $p=0.091$.

A comparison of ways in which the respondents cope with the loss of urine during intercourse was presented in Figure 5.

Discussion

In the presented study, current sexual activity was declared by 84.3% of women, and only 15.7% of them were not currently sexually active. This high percentage of activity may be caused

Table V. Presentation of the relationship between the occurrence of the loss of urine during sexual intercourse and the occurrence of sexual dysfunction.

			Loss of urine during sexual intercourse	
			no	yes
Sexual dysfunction	no	Number of respondents	29	4
		%	54.7%	23.5%
		Average FSFI score	31.4	32.6
	yes	Number of respondents	24	13
		%	45.3%	76.5%
		Average FSFI score	19.7	17.2

Chi-squared (1) = 3.851; $p = 0.023$.

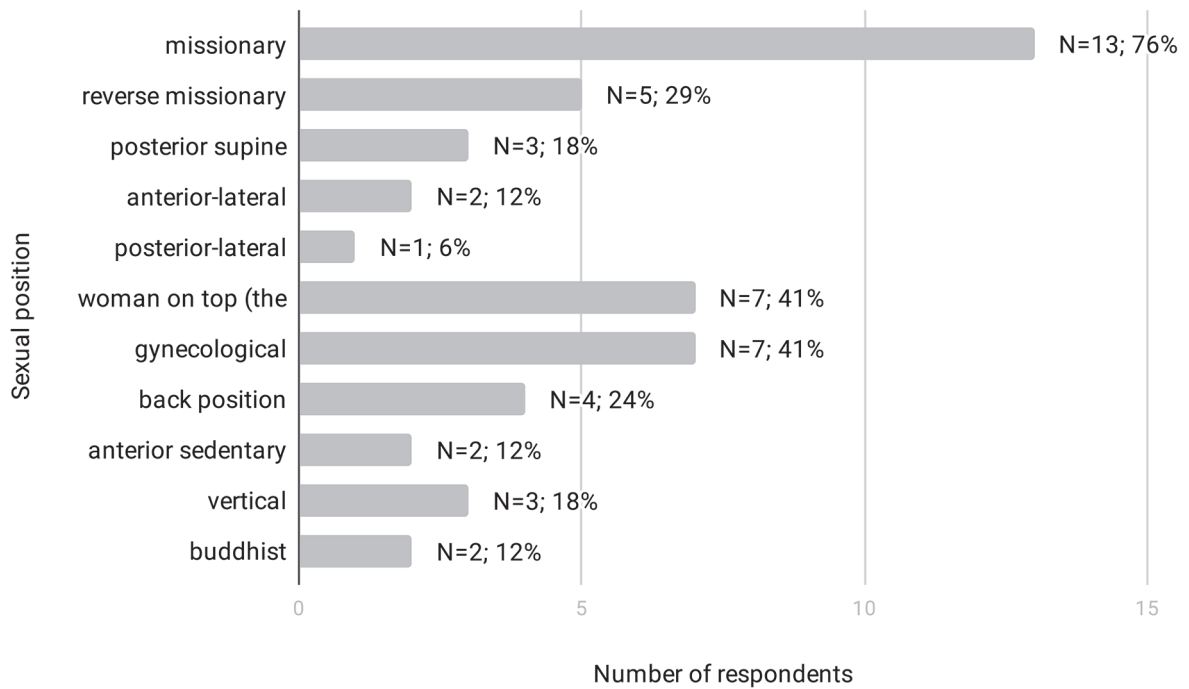


Figure 3. Sexual positions in which the urine is most often lost.

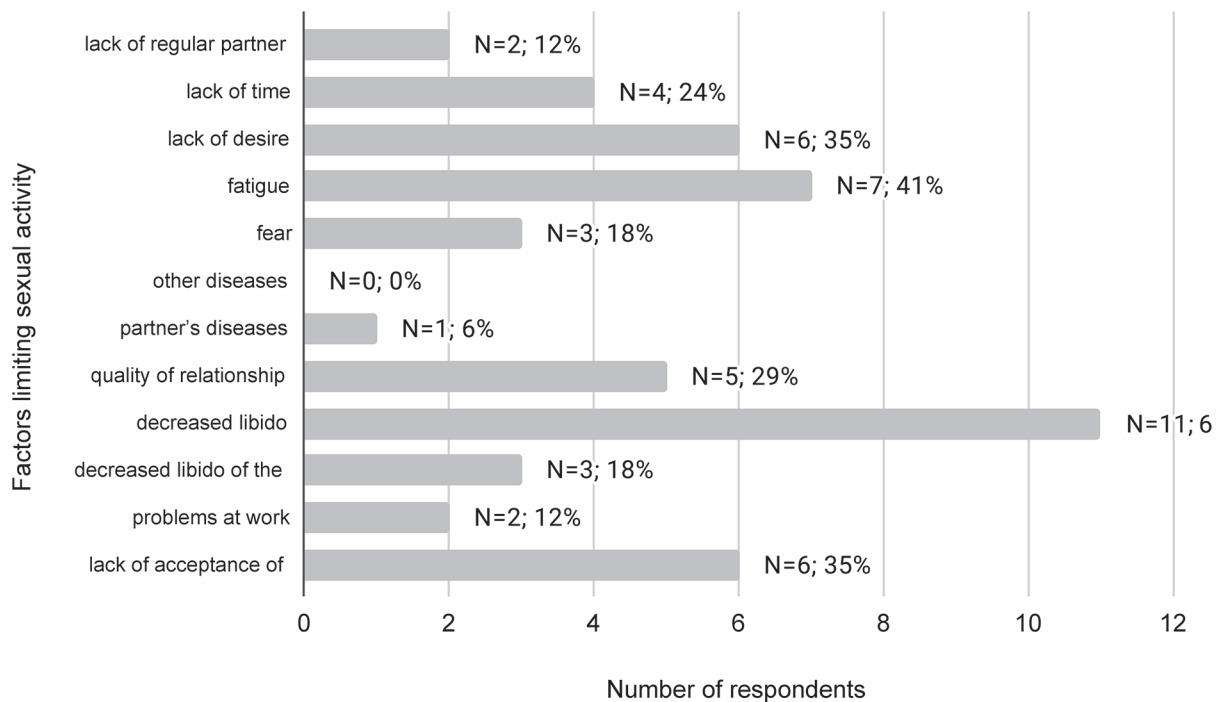


Figure 4. Factors limiting sexual activity.

by the low mean age of the women participating in the study (32.71 ± 6.6). Respondents, both currently sexually active and those who had ceased

sexual activity (currently sexually inactive), did not differ significantly in terms of age. Similar conclusions were reached by Handa et al¹³ who

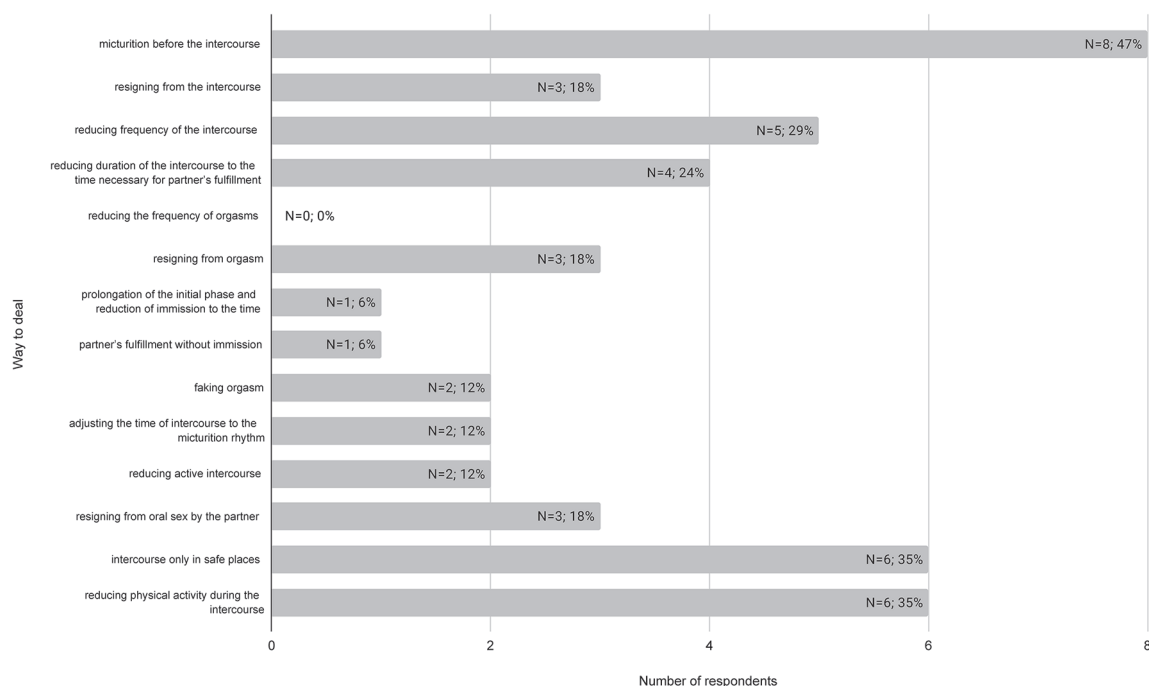


Figure 5. Ways to deal with the loss of urine during sexual intercourse.

showed that increasing age is not an indication of bad sexual functioning. On the other hand, studies including also younger women indicate decreased sexual activity associated mainly with increasing age. This means that age may constitute the indication of poor sexual functions in premenopausal women, but not in older women¹⁴⁻¹⁶. Al-Ali et al¹⁷ revealed sexual activity in 53.1% of examined women with a mean age of 58.7± 10.4 years and sexual inactivity in 46.9% of examined women with a mean age of 69± 10.9 years. BMI of examined women with urine loss during intercourse did not influence their sexual activity. Both sexually active and currently inactive women did not differ statistically significantly in regard to BMI. Meanwhile, Grzybowska et al¹⁸ demonstrated that women with coital incontinence (CI) had significantly higher BMI than control groups ($p < 0.03$). Frequency of CI was correlated with higher BMI ($r = 0.23$, $p = 0.01$). Madhu et al¹⁹ also observed that obesity is a significant risk factor of CI in women with lower urinary tract symptoms (LUTS) and CI, because it is connected with chronically increased intra-abdominal pressure and increased pressure exerted on the pelvic floor during sexual intercourse may explain CI in obese women¹⁸.

Nearly 1/4 of the respondents (24.3%) admitted that they do not hold urine during sexual intercourse. In the remaining 75.7% of women, this problem does not occur. Similar results were obtained by Bidzan et al¹. Out of 317 sexually active women, urinary incontinence during intercourse was affecting 19.5% of them¹. Meanwhile, Grzybowska et al¹⁸ demonstrated the frequency of urine leakage during sexual activities as 'sometimes' in 21.3% of women, 'usually' in 14.2%, and 'always' in 6.3%.

Hilton²⁰ divided urinary incontinence during sexual intercourse into occurring either during penetration or orgasm. However, some authors¹⁸ claim that this division does not account for physical exercise accompanying sexual activity. Respondents reporting the loss of urine during intercourse (24.3%) declared that it most frequently (35%) occurred during penetration, as well as during both penetration and orgasm (35%). Urine leakage during orgasm only was reported by 29% of the respondents. Grzybowska et al¹⁸ presented somewhat comparable results. In their study, the loss of urine during penetration was indicated by 36.1% of women with CI, during orgasm by 18.1%, and during both these moments by 45.8% of them. On the other hand, Jha and Gopinath²¹ indicated the

occurrence of CI during penetration in 31% of examined women and during orgasm in 40% of them. Different results were obtained by Moran et al²² who showed that urine loss during penetration concerns 70% of women, during orgasm 20%, and during both penetration and orgasm 11% of them.

The sexual activity of women is influenced not only by biological factors but also by psychological ones. Fear of losing urine during intercourse may be included in them, and 64.7% of respondents confirmed that it limits their sexual activity. Temml et al²³ showed that it contributed to limiting or worsening sexual life in the case of 25% of women.

Urinary incontinence during intercourse may also contribute to the occurrence of sexual dysfunctions, which may, in turn, translate to reduced interest in sex life. Among 70 respondents, sexual dysfunctions were present in 53% (N=37) of them. The mean FSFI score in this group was equal to 18.8 points. The remaining 47% (N=33) constituted women without signs of sexual dysfunction with a mean FSFI score equal to 31.5 points. Similar patterns were showed by Al-Ali et al¹⁷. In their study group, 46.2% of women (N=24) showed normal sexual functioning with a mean FSFI score equal to 30 ± 2.1 , and 53.8% (N=28) of them had disturbed sexual functioning with a mean FSFI score equal to 20.3 ± 5.4 ¹⁷. Meanwhile, the study of Narin et al²⁴ revealed decreased sexual functioning in all examined women (N=28), with a mean FSFI score equal to 23.15 ± 8.21 . Lim et al²⁵ used the GRISS (Golombok-Rust Inventory of Sexual Satisfaction) questionnaire to assess sexual functioning. Analysis of their results indicated that women with SUI had significantly higher mean overall GRISS scores (38.52 ± 10.07 vs. 33.74 ± 10.26 , $p = 0.006$) than healthy women, which is a sign of worse sexual functioning. Interpretation of individual GRISS subscales allowed to observe that women with SUI reported less frequent sexual activity ($p < 0.001$), bigger dissatisfaction ($p < 0.001$), and avoiding sexual contacts ($p < 0.026$). Only 50% of women with SUI (N=33) were moderately or very satisfied with their sexual life in comparison with 71.6% of healthy women (N=68) ($p = 0.028$)²⁵.

In this study, among women with sexual dysfunctions (N=37; 53%), the most affected domains of sexual functioning were 'orgasm' and 'pain' with mean scores of 1.35 and 0.87, respec-

tively. In domains 'lubrication' and 'arousal' women obtained mean scores equal to 2.05 and in case of 'satisfaction' 2.18. The least affected domain was 'desire' (2.78). For comparison, in a group of women examined by Narin et al²⁴ the domains that were most affected were 'orgasm' and 'arousal' with mean scores of 3.69 and 3.11. In the case of other domains, women obtained the following mean scores: 'lubrication' 3.95, 'satisfaction' 3.82, 'desire' 4.02, and 'pain' 4.56 (this was the least affected domain of sexual functioning). Al-Ali et al¹⁷ obtained slightly different results. In their study, the most affected domains were 'desire' and 'arousal' with mean scores equal to 3.4 and 3.9, respectively. In the 'orgasm' domain, the mean score was 4.1, and in both 'lubrication' and 'satisfaction' it was equal to 4.5. The least affected domain in their study was 'pain' with a mean score of 4.9.

This is a single-questionnaire-based study that evaluates sexual activity in terms of quality, which is a limitation. It would be good to supplement the research with a questionnaire to assess sexual activity in the psychological aspect, which is worth considering for the future. The weakness of the study is the small size of the study group. It results from the fact that both stress urinary incontinence and sexual activity of women with stress urinary incontinence are still taboo. For this reason, many women refused to participate in the study. This proves how important and difficult the topic was to the patients, which signifies the study's strength. Another strength of the research is also multicenter testing. The research involved women from different cities in Poland, and thus from various environments.

Conclusions

Briefly, SUI in women contributes to reduced frequency of intercourse in comparison with the period before the occurrence of the disease or even to definite resignation from sexual relations. SUI also contributes to the occurrence of sexual dysfunctions in women.

Decreased libido, fatigue, lack of desire, and lack of acceptance of their own body are the factors most frequently reducing women's sexual activity. It may also be significantly influenced by accompanying fears of not fulfilling the partner's expectations, the embarrassment of their body, fear of having to stop the intercourse due to loss of urine, and a sense of unattractiveness.

Women deal with the loss of urine during intercourse by micturition before intercourse, having sexual contacts only in safe places, reducing physical exercise during intercourse, and reducing intercourse frequency and duration.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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Data Availability

The [DATA TYPE] data used to support the findings of this study are available from the corresponding author upon request.

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