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Aspects of Sexual Functioning in post-stroke Patients

Aspekty funkcjonowania seksualnego u pacjentów po udarze

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Abstract

Introduction. Stroke is a sudden disruption of cerebral circulation, leading to hypoxia and damage to brain tissue, which can result in permanent neurological deficits. It significantly affects patients' sexual functioning, causing both physiological and psychological difficulties in the intimate sphere.
Aim. The aim of this study is assessment of the functioning of people after stroke.
Material and Methods. The research used a diagnostic survey method, which allowed for collecting data directly from 160 respondents. In order to assess the level of sexual functioning, two questionnaires were used, adapted to the respondents' gender: FSFI (Female Sexual Function Index) and IIEF-15 (International Index of Erectile Function).
Results. In the studied group of women after stroke, the mean response to the FSFI test was M=7.67, SD=8.086, which indicates a low level of sexual functioning in this group of women. The analysis of the compliance of the distribution of variables with the normal distribution showed no compliance for the analyzed variables, which means that the distribution of results in none of the analyzed variables is consistent with the normal distribution. In the study group of men after a stroke, the average IIEF-5 test response from the total score was M=1.13, SD=1.271, which also indicates a low level of sexual functioning in this group of respondents.
Conclusions. Men and women are not satisfied with their sexual life after stroke. Men after stroke have difficulty achieving erection and orgasm. Post-stroke women have difficulty achieving orgasm. Post-stroke women often experience discomfort and pain during sexual intercourse. **(JNNN 2025;14(2):61–67)**
Key Words: FSFI, functioning assessment, IIEF-5, sexuality, stroke

Streszczenie

Wstęp. Udar mózgu jest nagłym zaburzeniem krążenia mózgowego, prowadzącym do niedotlenienia i uszkodzenia tkanki mózgowej, co może skutkować trwałymi deficytami neurologicznymi. Znacząco wpływa na funkcjonowanie seksualne pacjentów, powodując zarówno fizjologiczne, jak i psychologiczne trudności w sferze intymnej.
Cel. Celem pracy jest ocena funkcjonowania osób po udarze mózgu.
Materiał i metody. W badaniach zastosowano metodę sondażu diagnostycznego, która pozwoliła na zebranie danych bezpośrednio od 160 ankietowanych. W celu oceny poziomu funkcjonowania seksualnego zastosowano dwa kwestionariusze, dostosowane do płci respondentów: FSFI (Female Sexual Function Index) oraz IIEF-15 (International Index of Erectile Function).
Wyniki. W badanej grupie kobiet po udarze średnia z odpowiedzi testu FSFI wyniosła M=7,67, SD=8,086 co wskazuje na niski poziom funkcjonowania seksualnego tej grupy kobiet. Przeprowadzona analiza zgodności rozkładu zmiennych z rozkładem normalnym wykazała brak zgodności dla analizowanych zmiennych, co oznacza, że rozkład wyników w żadnej z analizowanych zmiennych nie jest zgodny z rozkładem normalnym. W badanej grupie u mężczyzn po przebytym udarze mózgu średnia z odpowiedzi testu IIEF-5 z wyniku ogólnego wyniosła M=1,13, SD=1,271 co również wskazuje na niski poziom funkcjonowania seksualnego w tej grupie badanych.
Wnioski. Mężczyźni i kobiety nie są zadowoleni ze swojego życia seksualnego po udarze. Mężczyźni po udarze mózgu mają trudności w osiąganiu erekcji i orgazmu. Kobiety po przebytym udarze mózgu mają trudności w osiąganiu orgazmu. Kobiety po udarze mózgu często odczuwają dyskomfort i ból podczas stosunków seksualnych. **(PNN 2025;14(2):61–67)**
Słowa kluczowe: FSFI, ocena funkcjonowania, IIEF-5, seksualność, udar mózgu

Introduction

Stroke, which is one of the most serious neurological diseases, often leads to significant changes in the patient's life, both physically and mentally. Among the numerous consequences of a stroke that may significantly affect the quality of life, there is also the sexual sphere. Sexuality is a fundamental element of human life, and its disorders can lead to a significant deterioration of its quality. Understanding the impact of stroke on the sexual sphere is becoming increasingly important in the context of comprehensive patient care and rehabilitation. However, despite the increasing awareness of this issue, it is still often downplayed and omitted in the process of diagnosis and therapy [1].

Sexuality is an integral part of human life. According to the National Report on Sexuality 2024, 52% of Polish women and men believe that sex is of great importance to them, while 46% are satisfied with it and confident in their attractiveness and sexual skills. The latest research shows that middle-aged people between 35 and 49 are most likely to have sex. Despite these generally positive assessments, the sphere of sex is often a source of frustration and anxiety [2,3].

The aim of the study was to assess the sexual functioning of people after stroke based on gender.

Material and Methods

The study aimed to identify and analyze the impact of stroke on the quality of sexual life of patients, both women and men. A diagnostic survey using two tools to assess sexual functioning depending on the respondent's gender — FSFI (Female Sexual Function Index) and IIEF-5 (International Index of Erectile Function-5) was used. FSFI (Female Sexual Function Index) — this questionnaire is used to assess the sexual functioning of women. It consists of 19 questions covering six domains of sexual function: desire, arousal, lubrication, orgasm, sexual satisfaction, and pain. Each domain is rated on a Likert scale, which allows for obtaining an accurate picture of the sexual functioning of the women studied. IIEF-15 (International Index of Erectile Function) — this questionnaire is used to assess the sexual functioning of men. It consists of 15 questions covering five domains: erectile function, orgasmic function, sexual desire, sexual satisfaction, and overall satisfaction. Similar to the FSFI, each domain is rated on a Likert scale, which allows for a precise determination of the level of sexual functioning in men after stroke [4].

The inclusion criterion for the study was a history of stroke. The study was performed in January–March 2024. The inclusion criterion for the study was a history of stroke. The study was approved by the Bioethics Committee…, Poland (approval no. 11803/2024. The study was conducted in January–March 2024 at a neurological rehabilitation clinic in the eastern part of Mazovia. The study involved 160 people, including 80 women and 80 men.

Respondents were informed about the purpose of the study and were assured of anonymity and confidentiality of the data obtained. Participation in the study was voluntary, and questionnaires were delivered and completed in paper or electronic form, depending on the preferences of the participants. The collected data were subjected to statistical analysis, which allowed for the assessment and comparison of the level of sexual functioning of women and men after stroke.

Results

160 people (80 women and 80 men) took part in the study. Most respondents were aged 41–50 and constituted 32%, 23% were aged 51–60, 21% were aged 31–40, 12% were aged 20–30, the rest were over 61 years. 38% of people had a stroke 12–24 months ago, 32% of people had a stroke 7–12 months ago, 11% of respondents had a stroke 24–36 months ago, 10% — 6 months ago, and 9% of respondents had a stroke that took place 36 months ago.

Women experienced ischemic stroke more often than men — 48.5% vs. 44%. Men were more likely to have hemorrhagic stroke (both intracerebral and subarachnoid). This was particularly visible in the case of subarachnoid stroke, which did not occur at all in the respondents. In total, among all study participants, 92.5% experienced an ischemic stroke, 3.5% an intracerebral hemorrhagic stroke, and 4% a subarachnoid hemorrhagic stroke. 53% of respondents had a stroke in the left hemisphere of the brain. The study showed that the number of women with a left hemisphere stroke was higher than the number of men with the same type of stroke (46% vs. 7%). In turn, in the case of right hemisphere stroke, men dominated, outnumbering women affected by this type of stroke (43% vs. 4%).

Most women after a stroke rarely felt sexual desire or interest in sexual life. The greatest number of women surveyed, 73%, reported that they almost never or never felt sexual desire. 17% declared that they had felt sexual desire several times. The answer that they sometimes felt desire was given by 4%. The largest group of women, i.e. 45%, declared that they had not had sexual intercourse during the study period. Among sexually active women, 35% reported that they almost never or never felt sexually aroused, which could indicate potential sexual dysfunction due to a stroke. 33% reported having problems with vaginal lubrication during intercourse,

and 35% indicated that they almost never or never experienced orgasm after stroke. 33% almost always or always felt discomfort or pain during penetration. The respondents also indicated the level of satisfaction with the emotional closeness between themselves and their partner. 8% were very satisfied and rather satisfied, while the rest were the opposite.

In the study, men were asked about their sexual activity in the last 4 weeks — as many as 63% of respondents did not take any action on this issue. Among the remaining sexually active respondents, 19% reported that they almost never or never achieved an erection during sexual activity after stroke. Another 6% of men said they had tried intercourse 1–2 times. 10% of respondents attempted to have intercourse 3–4 times; 9% — 5–6 times, 7% — 7–10 times, and 4% — tried 11 or more times.

During the study, men rated how often the penis erection that occurred as a result of sexual stimulation was strong enough to allow the penis to be inserted into their partner's vagina. In most cases, 9% of men achieved a sufficient erection, and sometimes the erection was sufficiently intense in 5%. 3% of respondents indicated that they ejaculated during penetration. 81% of respondents were dissatisfied with their relationship with a loved one.

Based on the results of descriptive statistics for both genders, the following conclusions can be drawn: in the group of women after stroke, the highest mean was recorded for the domains of desire (M=1.70, SD=0.999) and sexual satisfaction (M=1.57, SD=1.278). In turn, the lowest mean was for the arousal scale (M=1.06, SD=1.408) and orgasm (M=1.09, SD=1.448). For the lubrication scale, the mean was M=1.14, SD=1.584, and for the sexual pain scale, M=1.12, SD=1.561. The median of the results for individual scales was Me=1.2. Mean scores for all scales were low. In the studied group of women after stroke, the mean was M=7.67, SD=8.086, which indicates a low level of sexual functioning in this group of women. The lowest score obtained was 2 points and the highest was 34.8 (Table 1).

Table 1. Descriptive statistics for the assessment of sexual functioning in women after stroke measured by the FSFI Questionnaire

Variable	M	Me	SD	As	Kr	S–W	p
Desire	1.70	1.2	0.999	2.284	4.823	0.569	0.000
Excitement	1.06	1.2	1.408	1.735	2.680	0.731	0.000
Lubrication	1.14	1.2	1.584	1.842	2.937	0.705	0.000
Orgasm	1.09	1.2	1.448	1.682	2.492	0.741	0.000
Sexual satisfaction	1.57	1.2	1.278	2.270	4.677	0.633	0.000
Pain related to sexuality	1.12	1.2	1.561	1.873	3.232	0.706	0.000
Total values	7.67	7.2	8.086	1.956	3.324	0.697	0.000

M — mean; Me — median; SD — standard deviation; As — skewness coefficient; Kr — kurtosis; S–W — Shapiro–Wilk test; p — level of statistical significance

The analysis using the Friedman Anova test showed a statistically significant difference between the domains of sexual functioning in women after stroke (F=135.05, p<0.05). It was shown that the highest level of functioning in the study group concerned the domain of sexual desire and satisfaction, while the lowest average level concerned the domain of arousal and orgasm. Next, the sexual functioning of women with left-sided and right-sided strokes was compared. The results of the Mann–Whitney U test indicated (U=29.5, Z=–4.932, p<0.05) a statistically significant difference between the groups, with the group with a stroke on the right side showing a higher level of desire, reaching orgasm more often and being sexually satisfied (Table 2).

It was also checked whether women who had suffered an ischemic stroke differed in the level of sexual functioning from women who had a hemorrhagic stroke. Due to the fact that the condition of equal numbers of compared groups was not maintained (chi^2=69.444, p<0.05), the Mann–Whitney U test was used. The significance level of 0.05 was assumed. The results did not show a statistically significant difference in the level of sexual functioning between women after ischemic and hemorrhagic stroke (p>0.05).

Then, a post hoc analysis was performed. It was shown that women aged 20–30 are characterized by a significantly higher level of sexual functioning, both in general (M=12.72, SD=10.542) and in individual domains, compared to people aged 31–40 (p <0.05), 41–50 years (p<0.05), 51–60 years (p<0.05) and over 60 years of age (p<0.05). Women aged 31–40 had a higher level of sexual functioning (M=10.59, SD=8.983) compared to older respondents. The lowest level of sexual functioning was recorded in the group of women aged 51–60.

In the group of men after stroke, the highest mean was recorded for the scale of general satisfaction (M=1.54, SD=1.161) and sexual desire (M=1.50, SD=1.061). In turn, the scales with the lowest mean were achieving an erection (M=0.93, SD=1.354) and satisfaction with sexual intercourse (M=0.92, SD=1.432). For the achieving orgasm scale, the mean was M=1.23, SD=1.263 (Table 3).

Also in the group of men after stroke, it was decided to check whether people who had a stroke on the right side of the brain differ in the level of sexual functioning from those whose stroke affected the left side of the brain. Due to the fact that the condition of equal numbers of compared groups was not maintained (chi^2=37.346, p<0.05), the Mann–Whitney U test was used. Men with right-sided stroke had a lower mean for overall sexual

Table 2. Results of the Mann–Whitney U test: Comparison of Sexual Functioning in Women with Left-Side and Right-Side Stroke

Variable	Side stroke	M	Me	SD	U	Z	p
Desire	R	3.69	4.2	1.316	29.5	–4.932	0.000
	L	1.51	1.2	0.731			
Excitement	R	3.04	4.8	2.396	135.5	–2.215	0.0027
	L	0.88	0.8	1.135			
Lubrication	R	3.43	5.4	2.792	129.0	–2.352	0.019
	L	0.92	0.9	1.248			
Orgasm	R	2.86	4.4	2.256	132.0	–2.287	0.022
	L	0.92	0.8	1.246			
Sexual satisfaction	R	3.77	4.8	2.140	84.0	–3.126	0.002
	L	1.36	1.2	0.950			
Pain related to sexuality	R	3.26	4.4	2.979	153.5	–1.913	0.056
	L	0.92	1.2	1.210			
Total values	R	20.04	29.8	13.579	93.5	–2.922	0.003
	L	6.50	6.8	6.360			

M — mean; Me — median; SD — standard deviation; U and Z — statistic of the Mann–Whitney test; p — level of statistical significance

Table 3. Descriptive statistics for the assessment of sexual functioning in men after stroke measured by the IIEF-15 Questionnaire

Variable	M	Me	SD	As	Kr	S–W	p
Achieving an erection	0.93	0.2	1.354	1.774	1.721	0.612	0.000
Reaching orgasm	1.23	0.5	1.263	1.707	1.413	0.617	0.000
Sexual desire	1.50	1.0	1.061	1.845	1.715	0.511	0.000
Satisfaction from sexual intercourse	0.92	0.0	1.432	1.402	0.644	0.683	0.000
Overall satisfaction	1.54	1.0	1.161	1.884	1.892	0.502	0.000
Total value	1.13	0.4	1.271	1.737	1.510	0.615	0.000

M — mean; Me — median; SD — standard deviation; As — skewness coefficient; Kr — kurtosis; S–W — Shapiro–Wilk test; p — level of statistical significance

functioning M=0.68, SD=0.736, compared to those with left-sided stroke M=3.43, SD=0.938. The results of the Mann–Whitney U test (U=26.5, Z=–5.917, p=0.000) indicated a significant difference. In summary, men with right-sided stroke showed significantly lower scores for sexual functioning in all analyzed categories compared to men with left-sided stroke.

Analysis using the Kruskal Wallis Anova test in the group of men after stroke showed a statistically significant difference between individual types of stroke in terms of sexual functioning, both in the general dimension (F=27.506, p<0.05) and in individual dimensions: achieving an erection (F=29.188, p<0.05), achieving orgasm (F=28.084, p<0.05), sexual desire (F=48.111, p<0.05), satisfaction with sexual intercourse (F=31.210, p<0.05) and overall satisfaction (F=48.247, p<0.05) (Table 4).

Post hoc analysis showed that a statistically significantly lower level of sexual functioning, both in general (M=0.75, SD=0.829) and in individual scales, was recorded for men who experienced ischemic stroke. The average results for this group were very low (ranged around 0.5–1.5). In the case of men after hemorrhagic and subarachnoid stroke, the level of sexual functioning was much higher (averages for individual dimensions of sexual functioning were in the range of 3–4.5). Respondents aged 41–50 were characterized by a significantly higher level of sexual functioning, both in general (M=1.74, SD=1.711) and in individual domains, compared to people aged 20–30 (p<0.05), 31–40 years (p<0.05), 51–60 years (p<0.05) and over 60 years of age (p<0.05). Men aged 31–40 had a higher level of sexual functioning (M=1.34, SD=1.288) compared to people aged 20–30 (p<0.05), 51–60 (p<0.05) and over 60 years (p<0.05). The lowest level of general sexual functioning (M=0.42, SD=0.031) was recorded in the group of men over 60 years of age.

Table 4. Anova Kruskal–Wallis Test Results: Comparison of Male Sexual Functioning by Stroke Type

Variable	Type	M	Me	SD	F	df	p
Achieving an erection	I	0.55	0.2	0.923			
	H	3.54	3.6	0.534	29.188	2	0.000
	SS	3.75	4.0	0.391			
Reaching orgasm	I	0.87	0.5	0.873			
	H	3.50	3.5	0.577	28.084	2	0.000
	SS	3.92	4.0	0.204			
Sexual desire	I	1.17	1.0	0.597			
	H	3.50	3.5	0.577	48.111	2	0.000
	SS	4.08	4.0	0.204			
Satisfaction from sexual intercourse	I	0.52	0.0	1.011			
	H	3.33	3.5	0.471	31.210	2	0.000
	SS	4.00	4.0	0.298			
Overall satisfaction	I	1.18	1.0	0.703			
	H	3.88	4.0	0.250	48.247	2	0.000
	SS	4.17	4.0	0.408			
Total value	I	0.75	0.4	0.829			
	H	3.53	3.6	0.475	27.506	2	0.000
	SS	3.92	4.0	0.268			

M — mean; Me — median; SD — standard deviation; F — statistic of the Kruskal–Wallis ANOVA; df — degrees of freedom; p — level of statistical significance; I — ischemic stroke; H — hemorrhagic stroke; SS — subarachid stroke

Discussion

Stroke significantly affected sexual functioning in both men and women. The research results are consistent with previous research in this field, but provide new and important information on specific aspects of this impact.

Ekstrand and Brogårdh conducted research in Sweden on life satisfaction among people after a stroke. 75% of respondents reported lack of satisfaction with their sexual life [5].

Montalvan V. et al. conducted a study on 150 patients and showed that sexual dysfunctions were diagnosed in 89 participants (59%), and only 10% of them rated their sexual functions as optimal. A clearly reduced frequency of sexual contact was observed in 49% of respondents, while a significantly reduced sexual drive was noted in 33% of respondents. The present study found that more than half of stroke survivors did not engage in sexual intercourse after the stroke, and the rest had specific difficulties with sexual functioning in various domains [6].

Koehn et al. conducted a similar study and found that 47 of 57 men after stroke reported erectile dysfunction. In the presented study, the scale for achieving an erection had the lowest mean (M=0.93, SD=1.354), which confirms that men after stroke rarely achieve an erection. The achievement of orgasm scale was also M=1.23, SD=1.263, which is a relatively low result confirming difficulties in achieving it [7].

Chaouche et al. they also conducted a comparable study in 2024 on a much smaller research group than the above, based on the same standardized questionnaires. Nearly 46% of respondents reported problems with sexual functioning. Men most often had problems with erection and women with lubrication. Similar results were obtained in the presented study [8].

Research by Yilmaz et al. also confirm that stroke has a negative impact on sexual functioning, especially in women. The results obtained using the FSFI scale showed that women after stroke had significantly lower scores compared to the control group. In the present study, sexual function scores determined by FSFI were significantly lower in women with stroke (16.02–8.85) compared to controls (27.55–5.11; P 0.001). In the study group of women after stroke, the mean was M=7.67, SD=8.086, which indicates a low level of their sexual functioning. Women after stroke experienced significant difficulties in their sexual lives. The analyzed results of the conducted research showed an average for the domain of desire (M=1.70, SD=0.999) and sexual satisfaction (M=1.57, SD=1.278), while the lowest average was for the arousal scale (M=1.06, SD=1.408) [9].

Sexual dysfunction after stroke varies depending on age and type of stroke. The results indicate that younger women (20–30 years old) have a higher level of sexual functioning compared to older age groups. This is consistent with previous research showing that age has a significant impact on sex life after stroke. Men aged 41–50 are also characterized by a higher level of sexual functioning compared to other age groups.

The lack of significant differences in the level of sexual functioning between women after ischemic and hemorrhagic stroke indicates that the type of stroke may have a less significant impact on sexual life than one previously thought. This is consistent with research findings that suggest that it is not the type of stroke but its neurological consequences that have a greater impact on sexual functioning.

Conclusions

The results of this analysis provide important information for clinical practice. This knowledge can be used to better understand the impact of stroke on patients' sexual lives and to develop enhanced rehabilitation programs. One multidisciplinary study among health care workers indicated that only 23% of them initiate conversations about sexuality with people after stroke [10]. This analysis highlights the great need for medical personnel to pay attention in this direction. This also highlights the need for further research that could examine in more detail the impact of various factors on sexual functioning after stroke, including research on differences between sexes, age, and types of stroke.

Implication for Nursing Practice

Each member of the nursing staff should also be aware of the consequences of post-stroke in patients in the context of sexual life. Establishing closer contact and spending time with the person being cared for may help him or her open up to these issues. In addition to interdisciplinary cooperation, an important activity would also be the possibility of undergoing training in the field of sexual functioning of patients with various diseases and conditions, which would allow for earlier identification of sexual problems. Professional training in this area should be introduced, and sexual counselors should become members of the therapeutic team in the rehabilitation of people after a stroke. It would be worth equipping nursing staff with appropriately effective tools in this direction (PLISSIT model) [11]. In the near future, a beneficial move would be to conduct a study in our country using the Delphi method among specialists dealing with this disease [12].

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