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Sexual Dysfunction in Post-Stroke Patients

Sri Dearmaita Purba[1], Flora Sijabat[2], Amila[3]

College of Nursing, Sari Mutiara Indonesia University

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Corresponding author:
Name: Amila
Address: Jl. Kapten Muslim No.79, Helvetia Tengah, Kec. Medan Helvetia, Kota Medan, Sumatera Utara 20124.
Email: mila_difa@yahoo.co.id

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Abstract

Introduction: Stroke is a leading cause of death and disability worldwide. Currently, there is a pattern of shifting stroke epidemiology towards the young and productive age range of 18-45 years due to lifestyle. Post-stroke physical and cognitive impairments have been well studied, little is known about sexual function and satisfaction in these patients, despite it being an important aspect of quality of life. The problem of sexual dysfunction in young post-stroke patients is rarely detected and given less attention as the patient's recovery focuses on daily functional ability. **Objective**: To identify young adult post-stroke patients with disability with sexual concerns, functional status and quality of life. **Method**: The study used quantitative methods (descriptive research) with a cross-sectional design using purposive sampling totaling 29 people in young adult post-stroke patients (18-45 years old) at Dr. Pirngadi Medan General Hospital. Data collection instruments used the Changes in Sexual Functioning Questionnaire (CSFQ-14) to assess sexual changes, Stroke-Specific Quality of Life (SS-QoL-12) to assess quality of life and Barthel Index (IB) to assess functional ability. The study data were analyzed using the SPSS program. **Results:** There were 29 subjects with a mean age of 39.07±6.39 years, mainly male (58.6%) and suffering from ischemic stroke (89.7%). Most subjects had sexual dysfunction (82.3%), mild dependence (65.5%) and high quality of life (58.6%). **Recommendation:** Nurses need to screen and evaluate post-stroke sexual dysfunction, so that neurorehabilitation can be done to improve the patient's quality of life

Keywords: dysfunction, stroke, sexual, young age.

INTRODUCTION

Stroke is a disease of major public health concern and a leading cause of mortality and disability worldwide (1). Based on data collected sporadically from hospitals in Indonesia, there is an increase in morbidity rates in line with increased life expectancy and lifestyle changes. The onset of stroke at a young age is strongly associated with an ambitious lifestyle and temperament (2).

Basic Health Research data in 2018 reported that the prevalence of stroke in the population >15 years nationally was 10.9 per 100, a significant increase compared to 7 per 100 population 5 years earlier. Stroke cases aged 18-45 years are around 19% and more men (11%) than women (10.9%)(2).

The results of Amila's research (2020) found that the number of stroke patients at Dr. Pirngadi general hospital Medan are young age (20-35 years) in 2017 amounted to 45 people, in 2018 aged 22-35 years amounted to 40 people, in 2019 aged 22-35 years amounted to 35 people (3). In 2023, the age of 18-45 years amounted to 42 people. The results of research by Mahendrakrisna et al (2019) describe 420 stroke patients at the Surakarta City Hospital in the January 2017-June 2018 timeframe, 28 young stroke patients were obtained, with an average age of 39.6 years with an age range of 29 to 45 years, with 53.6% male (4).

Stroke causes disabilities, such as motor, sensory and autonomic nerve disorders. Communication, cognitive, physical, psychological, frailty, stress and memory impairments that occur in post-stroke are often studied. However, little is known about sexual function and satisfaction in stroke patients, especially young stroke patients (5).

After 20 years, today sexuality in stroke patients is still considered taboo by patients themselves, caregivers, and especially healthcare professionals (6). The problem of sexual dysfunction after stroke is rarely detected because patients are embarrassed to discuss the problem. In certain regions, sexual issues are sacred and private, and should not be discussed openly in the local culture. Especially among local women, cultural norms prohibit them from openly discussing sex, often seen as a sign of promiscuity and a predisposition to infidelity (7).

Health professionals felt ill-prepared to address sexuality with stroke survivors and rarely provided information or asked questions about sexuality.

Previous studies have also shown that sexuality is a neglected part of stroke rehabilitation, even though sexual issues are an important aspect in relation to the well-being and quality of life of post-stroke patients (8). All post-stroke disabilities, sexual dysfunction is an under-recognized occurrence and should be widely discussed as another sequela (9,10).

Impaired sexual function after stroke, including decreased libido, poor or limited erection and ejaculation or decreased libido in men, reduced vaginal lubrication, arousal problems or orgasmic dysfunction in women has been reported to vary between 17%-42%. (8,11). The prevalence of sexual dysfunction was 93.3% in post-stroke patients, especially men at the Neurology Poly of H. Adam Malik Medan Hospital in 2018 (12).

Post-stroke sexual problems are common with up to 75% of male stroke patients reporting erectile dysfunction and up to 77% of female stroke patients reporting difficulty in vaginal lubrication (8). The prevalence of post-stroke sexual dysfunction ranges from 20%-95% occurring in both sexes (13,14). Comorbid factors that are thought to have an important role in the incidence of erectile dysfunction in stroke patients include hypertension, DM, and hypercholesterolemia. Other risk factors are age, smoking, and obesity (15,16,17,18). In addition, psychological factors have a role in the incidence of erectile dysfunction.

Sexual dysfunction and disability after stroke can affect long-term quality of life. The physical and psychological impact experienced in older age with post-stroke tends to be more severe than younger age (12). Young stroke patients have a longer life span, so they will lose productivity or work career, independence, social life identity and even reduce the quality of life which ultimately causes psychological burden, stress and depression (19,20,21).

Sexual dysfunction tends to make patients lack self-confidence, feel less loved and appreciated (11,14). Decreased sexual activity for patients and their spouses affects marital harmony because their sexual needs are not met (22).

The issue of post-stroke sexual impairment not only impacts the patient, but also their partner. It is often experienced as a critical life event and impacts the psychological health of the caregiver. Sexuality is an integral and important part of quality of life in patients with neurological disabilities. However, although patients experience sexual impairment, patients usually do not seek counselling and moreover this issue is not often assessed by health professionals, including nurses.

Information on sexual activity after stroke is another area that is highly underestimated by rehabilitation facilities. More than 30% of participants would like to receive information on post-stroke sexual behaviour, but only a small proportion of participants (8.2%) receive it, as shown by Prior et al when they investigated 1265 stroke patients during the rehabilitation period (23).

Patient recovery efforts only focus on daily functional abilities, while the sexuality aspect is less / not considered, so it cannot be further intervened (11). Stroke patients and their partners struggle to communicate about sexuality, and health professionals rarely address this topic during rehabilitation. This situation is further exacerbated by social norms that restrict people with disabilities from being supported to express their sexuality.

As recently stated that (6) only 23% (n = 216 out of 958) of stroke rehabilitation professionals directly initiated a sexual dialog with their patients. Notably, they showed that sexuality education, religious affiliation, age, and availability of sexuality rehabilitation programs predicted comfort in addressing these issues.

To date, few studies, meta-analyses, and epidemiological studies have been conducted on the sexual dimensions of post-stroke patients, assessing only other aspects of sexuality such as self-esteem, gender, sexual orientation identity, reproduction, intimacy, eroticism, and sexual communication (physical and psychological aspects of sexual functioning).

OBJECTIVE

The aim of the study was to identify sexual disorders, functional abilities and quality of life of post-stroke patients in the neurology outpatient department of Dr. Pirngadi General Hospital Medan.

METHODS

The research design was correlational analytic with a *cross-sectional* approach determined by *purposive sampling* as many as 29 young post-stroke people (18-45 years old). The sample used inclusion criteria, namely having at least 1 regular sexual partner for at least 3 months before the study, being able to communicate well, and agreeing to participate in the study. Exclusion criteria were patients who had a history of sexual dysfunction before stroke, mental disorders, history of depression and cognitive impairment.

The study was conducted in the neurology outpatient department of Dr. Pirngadi General Hospital Medan in June-October 2024.

Data collection tools in this study were medical record data and questionnaires. CSFQ-14 questionnaire to assess post-stroke sexual dysfunction, Stroke Specific Quality of Life Scale-12 items to measure quality of life, Barthel Index (IB) to assess functional ability.

The CSFQ-14 instrument has been shown to have good validity and reliability. The CSFQ-14 scale has good internal consistency, with Cronbach's alpha coefficients of 0.90 for the total sample, 0.91 for men, and 0.87 for women (7,24). The CSFQ-14 scores have been translated into Indonesian and have been commonly used in other institutions around the world. The CSFQ-14 instrument, consists of 14 questions to assess: pleasure, desire/frequency, desire/interest, arousal/stimulation, and orgasm/completion. The minimum CSFQ-14 score is 14 and the maximum is 70. Women are considered to have sexual dysfunction if they score <41, while men score <47 (7).

The instrument to test functional ability is the Barthel Index (25). The range of categories included: scores >90 independent, 61-90 mild dependence, 41-60 moderate dependence, 21-40 severe dependence, and ≤20 total dependence. Inter-rater between two data collectors was used to evaluate the reliability of this tool.

The 12-item Stroke Specific Quality of Life Scale instrument used measures quality of life including self-care, mobility, upper extremity

function, language, vision, work, thinking, role in family, social role, personality, mood and energy (25). The validity and reliability of the questionnaire was tested on 30 stroke patients. The validity test results showed that all question items were valid with a validity score of 0.393-0.717 (r>0.30), while the reliability test showed Cronbach Alpha (α) was 0.882 (26). The total score of patients' quality of life as measured by SSQOL-12 items was 12-48. The SSQOL-12 score categories are high quality of life if the total score is 36-48, moderate quality of life if the total score is 24-35, low quality of life if the score is 12-23.

To determine percentage, mean, and standard deviation using descriptive analysis. The bivariate test was used to determine the relationship between sexual dysfunction and Barthel index with quality of life using the Spearman test. The data were processed using SPSS For Windows Version 26.0.

Ethical feasibility tests have been carried out at the FK UMSU Medan Health Research Ethics Committee and have received ethical approval number 1265 KEPK / FKUMSU / 2024. Before the questionnaires were distributed, the researcher explained the purpose of the research to all respondents, gave consent to respondents who were willing to become respondents in this research.

RESULTS

There were 29 subjects with a mean age of 39.07±6.39 years, mainly male (58.6%) and suffering from ischemic stroke (89.7%). Most subjects had sexual dysfunction (82.3%), mild dependence (65.5%) and high quality of life (58.6%) (table 1).

Almost all subjects (Table 1) experienced sexual dysfunction (82.8%), especially men (88.2%) (Table 2).

The mean IB score in this study (Table 3) was 85.17± 9.77. Barthel index category was mild (65.5%).

The results showed that the energy item was the poorest quality of life dimension (mean=2.00, SD=0.96), while the upper limb function item was the best (mean=3.72, SD=0.65). The mean total score of SS-QOL 12 was 37.86± 5.01.

The result showed that there isn't relationship between sexual dysfunction with quality of life (p = 0.718; r = -0.07), meanwhile there is relationship between Barthel index with quality of life (p=0.028; r = -0.41) (table 4).

Table 1. Stroke Patient Characteristics (n=29)

	Frequency (f)	Percentage (%)
Age (years)	Mean± SD	39.07± 6.39
Min	18	
Max	45	
Gender		
Male	17	(58.6)
Female	12	(41.4)
Education		
Elementary	6	(20.7)
Junior high	3	(10.3)
Senior high	16	(55.2)
University	4	(13.8)
Jobs		
Not working	5	(17.2)
Work	24	(82.8)
Type of stroke		
Ischemic stroke	26	(89.7)
Hemorrhagic stroke	3	(10.3)
Risk Factors		
Hypertension	14	(48.3)
DM	4	(13.8)
High cholesterol	5	(17.2)
Heart Disease	1	(3.4)
Smoking	13	(44.8)
History of stroke		
First time	26	(89.7)
Recurring	3	(10.3)
Sexual Dysfunction	Mean± SD	1.17± 0.38
Yes		
No	24	(82.8)
	5	(17.2)
Barthel Index		
	Mean± SD	85.17± 9.77
Independent	7	(24.1)
Mild dependence	19	(65.5)
Medium	1	(3.4)
Weight	2	(6.9)
Quality of life	Mean± SD	37.9± 5.01
High	17	(58.6)
Medium	12	(41.4)

Table 2. Sexual Dysfunction in Men and Women (n = 29)

Variables	Male n (%)	Female n (%)	Total n (%)

Sexual Dysfunction			
Yes	15 (88.2)	9 (75)	24 (82.8)
No	2 (11.8)	3 (25)	5 (17.2)

Table 3. Barthel Index Questionnaire Item Description Table

Barthel Index	Mean	SD	Min	Max
Eating and drinking	8.62	2.27	5	10
Switching places	13.97	2.06	10	15
Personal hygiene	4.83	1.63	0	10
Taking off and putting on clothes in the toilet	7.93	2.51	5	10
Bathing	5.00	1.89	5	10
Walk	10.34	2.65	5	15
Up and down stairs	6.38	3.24	0	15
Get dressed	8.62	2.27	5	10
Bowel Control	9.66	1.29	5	10
Urination control	9.83	0. 93	5	10
85.17	9.77	60	95	

Table 4. SS-QOL Questionnaire Item Description 12

Quality of Life	Mean	SD	Min	Max
Self-care	3.62	0.68	2	4
Mobility	3.21	0.82	2	4
Upper limb function	3.72	0.65	2	4
Language	3.66	0.55	2	4
Vision	3.48	0.69	2	4
Work	2.83	0.89	1	4
Think	3.21	0.73	2	4
Role in the family	2.76	0.79	2	4
Social role	3.14	0.69	2	4
Personality	3.00	0.88	1	4
Mood	3.24	0.83	2	4
Energy	2.00	0.96	1	4
37.86	5.01	27	45	

Table 4. The relationship between sexual dysfunction and functional ability with quality of life

	Quality of life	
	P- value	**r**
Sexual dysfunction	0,718	-0.07
Barthel Index	0.028	-0.41

DISCUSSION

Sexual dysfunction

The results showed that most patients experienced sexual disorders as much as 82.8%. This is in accordance with the research of Oyewole et al in 2017 that sexual dysfunction (DS) occurred in 87% of post-stroke patients (7). In research (12) that almost all post-stroke patients experience sexual dysfunction (93.3%). In line with the results of research on the description of erectile function in stroke patients at Prof. Dr. R. D Kandou Manado Hospital, respondents who experienced erectile dysfunction were 34 people (85%), with the highest number in mild erectile dysfunction at 35% and mild to moderate erectile dysfunction at 32.5% (27). The results of 30 out of 104 people experienced impaired sexual activity in young ischemic stroke patients 1 year after the stroke attack (13,28). The prevalence of erectile disorders in post-stroke patients among 14 studies ranged from 32.1 to 77.8%, which is much higher than the general population (10). The incidence of erectile dysfunction among stroke patients was higher than among non-stroke patients (OR=5.8; 95% CI: 2.9 – 11.7).

Sociodemographic factors influence sexual dysfunction. At the sociodemographic level, aging, low income and high education are additional factors that can affect the appearance of sexual dysfunction in stroke patients, while gender is not decisive in its development (11), In addition to organic factors, post-stroke sexual dysfunction can also be affected by psychological problems (such as anxiety or mood disorders), previous medical conditions (such as hypertension or diabetes mellitus), or the use of certain medications to treat these problems. It has been shown that rather than stroke itself, the key factors associated with impaired sexual activity post-stroke are angiotensin-converting enzyme (ACE) inhibitors, diabetes mellitus, and depression (10,29,30). Stroke risk factors, including diabetes, hypertension, and dyslipidemia, may influence erectile impairment, and conversely erectile impairment may be the first sign of atherosclerosis and then a potential marker of stroke. Indeed, in a recent meta-analysis, Zhao and colleagues showed that the presence of erectile disorder increased the rate of coronary heart disease by 43-59% (10).

Sexual dysfunction in men such as decreased libido, poor or limited erection, and ejaculation is often observed after stroke (30,31). Korpelainen et al showed a significant decrease in libido, sexual arousal, and satisfaction with sexual life in both male and female patients after stroke, although the frequency of patients ceasing sexual intercourse was not high, with 28 percent at two months and only 14 percent at six months after the acute event (30).

Libido is often impaired after stroke, and the reported prevalence of post-stroke reduced sexual desire varies from 17 to 42 percent.

Sexual dysfunction in women generally takes the form of impaired sexual desire, arousal, orgasm, or pain. In Cheung's study involving post-stroke patients with mild disability to no disability, it was observed that more than 50% of women reported experiencing sexual dysfunction before stroke (32). However, after stroke, the prevalence of sexual dysfunction increased significantly to 75%. Before stroke, one-third of women reported difficulty achieving orgasm, whereas after stroke, 50% of women reported difficulty orgasm.

In women, physical limitations related to participation in sexual acts that focus on the genital region of the female body are affected by fatigue. Limitations resulting from changes in the female body, vague fears and the fear of having another stroke, caused women to lose their sense of sexual activity (33). The most common factor identified as a cause of decreased sexual activity was the fear that having sex could adversely affect blood pressure and cause another stroke.

The results of the study (34) participants stated that before the illness normal sexual intercourse and after the illness rarely to do and also participants expressed less satisfaction when having sexual intercourse during stroke. Stroke has become a major cause of disability that can impair physical, linguistic, cognitive, and sexual function.

Functional ability

The results of this study indicate that the IB category in the subjects of this study is mostly mild dependence (65.5%). In line with the results of research by Stein et al in 2013 showing the majority of post-stroke as much as 78.8% with criteria not fully dependent (35). The results of the study differed from research (12) that the majority of stroke patients were in the independent category (55.6%).

Physical impairments can have an important role in the etiology of long-term sexual problems. Motor deficits are the most common impairment seen after stroke and involve the face, upper extremities and/or lower extremities. As in severe brain trauma, the effects of a devastating stroke can affect body position and movement and challenge the ability to embrace and stimulate a partner during sexual intercourse. Obvious weaknesses are drooling, bladder and bowel incontinence, and other potentially unattractive behaviors (29,36). Facial falls, speech and memory problems, hemiparesis, feeding difficulties, and incontinence can all contribute to feeling less attractive, with consequent loss of desire and reduction in sexual intercourse (37). Stroke of the right-central cerebral artery can potentially produce not only hemianesthesia, but also perceptual neglect (i.e., inability to interpret the left side of the environment), both of which can interfere with erotic sensations.

In line with Sjogren's study which highlighted that the level of independence in activities of daily living serves as a reliable predictor of sexual activity (38). This finding was corroborated by Kimura and Murata's study, which identified a positive correlation between functional disability and sexual dysfunction (SD). In a survey involving post-stroke patients (15). 55% of couples identified hemiparesis as the main obstacle to sexual activity, while 29% cited spasticity, 19% reported sensory deficits, and 14% mentioned aphasia as the main reason for stopping sexual activity.

It is no coincidence that people with more severe physical impairments experience emotional disturbances and decreased sexual intercourse more often than people with mild impairments. Depression and fear of recurrent stroke are examples of psychological factors that affect sexual function and, in particular, sexual desire, but low self-esteem, partner rejection and job loss are other important issues that need to be taken into account (11). In line with the results of previous research (34), 4 themes, 2 subthemes and 7 categories were obtained. The themes were biological, psychological, social and spiritual impacts.

Stroke causes physical and psychosocial barriers to sexual activity and both aspects of the problem need to be addressed. Physically, mobility limitations such as hemiplegia or hemiparesis can affect comfort and positioning and therefore play an important role in sex after stroke. The study in England showed that the level of independence in activities of daily living can be used as a predictor (36).

Quality of life

The results showed that the quality of life of post-stroke patients was mostly high. Supported by the results of previous research (39) that the majority of stroke patients have a high quality of life as many as 78 people (96.3%). In contrast to the results of Arifin's research (2019) that the overall quality of life picture is relatively better in men with the relatively lowest health-related value is the power domain (12).

The results of this study show that the energy item is the worst quality of life dimension, while the upper limb function item is the best. The energy dimension is one of the psychosocial aspects of the SS-QOL 12 questionnaire. In this questionnaire, the question asked to respondents is the respondent's feeling of fatigue easily in doing activities that patients usually do, such as work or activities at home. The patient's subjective feeling of energy, which in this case is about feeling easily tired in carrying out daily activities related to hemiparesis is often found to be spasticity, muscle weakness, and persistent impairment in coordination of movement (40). Fatigue experienced can be due to post-stroke patients having limitations to perform daily activities, so patients feel tired in performance in most of their activities.

The overall quality of life in the study subjects was relatively higher in the physical domain than the psychosocial domain. This is in accordance with Oyewole et al that post-stroke patients have high quality of life scores and the physical domain is better than the psychosocial domain (7). The psychosocial domain of HRQoL was more affected than the physical domain among surviving poststroke. This suggests that although motor impairment is common due to stroke, emotional/psychological is much more impactful (7, 41). It is no coincidence that people with more severe physical impairment experience emotional disturbance and decreased sexual relations more often than people with mild impairment.

Mood disorders, such as depression, anxiety, and post-traumatic stress disorder (PTSD), are frequently observed after stroke. Therefore, post-stroke depression commonly results in sexual dysfunction, and, conversely, mood changes appear to be related to dependence on activities of daily living (ADLs) and the severity of neurological deficits (36, 8)

This research has several limitations. This study did not look at lesions in stroke patients. At the neurological level, sexual disorders in post-stroke patients are generally caused by damage to areas of the central nervous system that control sexual behaviour, and the autonomic system that determines erectile dysfunction. For example, stroke in the right cerebellar region may be associated with ejaculatory disorders, while erectile dysfunction may be more common in stroke patients in the middle cerebral artery region, such as in the right hemisphere versus the left hemisphere (87.5% vs. 70.6%)(10).

The relationship between sexual dysfunction and functional ability with quality of life

The study showed that there is a relationship between functional ability and quality of life at Dr. Pirngadi Medan General Hospital. The results of a metanalysis of 12 articles consisting of 2,015 selected stroke patients showed that functional status had a significant positive effect on the quality of life of stroke patients (b = 0.63; 95% CI = 0.52 to 1.08; p = 0.0001) (42).

The research findings indicate a connection that patients experiencing impairments in the lower extremities face difficulties in climbing stairs and walking due to residual neurological symptoms. The condition experienced by these patients requires them to exert more effort to perform these activities in their daily lives, as evidenced by the analysis results, which show that the physical domain, particularly the items related to energy and work, are the most affected aspects of quality of life. Thus, it is necessary to educate patients and families about the importance of maintaining mobility-focused functional status in daily life to improve their quality of life, especially focusing on improving lower extremity function. In

contrast to study by Ariyanti et al (2019), Eqlima (2015) explaining that there is no relationship between functional status and quality of life (39, 43).

The study showed that there isn't a relationship between sexual dysfunction and quality of life. Post-stroke sexual disorders are thought to be caused by various etiologies, including organic (e.g., lesion localization, premorbid medical conditions, medication) and psychosocial (e.g., fear of recurrence, loss of self-esteem, role changes, anxiety and depression) etiologies (30). Sexual function depends on a complex network of peripheral and central pathways involving the participation of autonomic and somatic nerves as well as the integration of a number of spinal and supraspinal locations within the central nervous system (CNS), with the hypothalamic and limbic regions playing an important role (44).

The causes of SD are often multifactorial, with complex interactions between psychological and organic factors. In fact, sexual problems seem to be related to a variety of factors, such as general attitudes towards sexuality, depression that comes with anxiety after a stroke, or previous medical conditions, such as hypertension, diabetes mellitus, or the use of certain medications (44). In addition, mood disorders, such as depression, anxiety, and post-traumatic stress disorder (PTSD), are frequently observed after stroke. Post-stroke depression commonly results in sexual dysfunction and, conversely, mood changes appear to be related to dependence on activities of daily living (ADLs) and the severity of neurological deficits (8).
In line with the study of Oyewole (2016) explaining that stroke patients with low sexual dysfunction but with mild disability have a relatively better quality of life than those with moderate / severe disability even when stroke patients have higher sexual dysfunction. The quality of life of stroke patients is negatively affected by disability but not by sexual dysfunction although there is a direct correlation between sexual dysfunction and quality of life. Low quality of life of stroke patients is determined by patients' disability and not by sexual dysfunction (7).

Implication

Nurses have an important role in the process of improving stroke patients in the healing phase, especially in the subacute phase, which is two weeks to six months after the last attack. Sexual dysfunction is common after stroke, but often goes unaddressed by healthcare providers. Many stroke survivors experience sexual dysfunction and indicate a desire for additional information and counseling from healthcare providers. Most stroke survivors identified sexuality as an important issue in their post-stroke rehabilitation.

For nurses, the assessment of sexual disorders is the first step in assessing sexual quality for further recovery efforts for stroke patients. Nurses need to explore and evaluate post-stroke sexual dysfunction, as it can hinder the rehabilitation of post-stroke patients.

Rehabilitation goals should focus on reducing disability and improving sexual function to improve quality of life. Nurses need to identify and evaluate post-stroke sexual dysfunction, because it can hinder post-stroke patient rehabilitation. Sexual dysfunction is negatively correlated to the physical and psychosocial well-being of stroke survivors.

Rehabilitation professionals should equip themselves with tools to provide counseling to stroke survivors regarding sexual issues, because sexual dysfunction is a common occurrence after stroke.

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