REVIEWS

Sexual Function in Post-Stroke Patients: Considerations for Rehabilitation

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ABSTRACT

Introduction. While the rehabilitation goals of post-stroke patients include improving quality of life and returning to functional activities, the extent to which sexual activity is addressed as part of the standard rehabilitation process is unknown. Moreover, the specific sexual concerns of stroke patients, including the effect of stroke on intimate relationships and sexuality of the partner, the ability to physically engage in sex, and the effect of psychological components such as role identity, depression, and anxiety on sexuality, all warrant examination by rehabilitation professionals.

Aim. The aim of this study is to examine the existing literature on sexuality and stroke patients in order to better understand how the sexual lives of stroke patients and their partners are affected and to provide recommendations to rehabilitation professionals for addressing sexuality as part of treatment.

Methods. Narrative review, PubMed, PEDro, ISI Web of Science, and Google Scholar databases (inception—December 2012) were searched for the key words "stroke," "sexual dysfunction," "sexuality," "quality of life," and their combination. All relevant articles in English and secondary references were reviewed.

Main Outcome Measures. We report the results of the literature review.

Results. Sexual dysfunction and decreased sexual satisfaction are common in the post-stroke population and are related to physical, psychosocial, and relational factors. However, they are not adequately addressed in post-stroke rehabilitation.

Conclusions. As sexual function is an important component to quality of life and activities of daily living, physicians and rehabilitation specialists, including physical, occupational, and speech therapists, should receive training in addressing sexuality in the treatment of post-stroke patients. Sexologists and sex therapists should be an integral part of the rehabilitation team. **Rosenbaum T, Vadas D, and Kalichman L. Sexual function in post-stroke patients: Considerations for rehabilitation. J Sex Med 2014;11:15–21.**

Key Words. Stroke; Sexual Dysfunction; Sexuality; Male; Female; Rehabilitation; Quality of Life

Introduction

Stroke is a leading cause of death and disability in the western world [1]. The physical and emotional sequelae of stroke survivors have been the subject of intensive research, and several studies have indicated that patients experience depression, loss of control, and grief [2,3]. Stroke survivors also experience a profound role identity change in society, with their family, and in their intimate relationships [2,4]. However, there is a paucity of literature regarding the impact of stroke on individual sexual functioning, intimate relationships, and sexual satisfaction. Furthermore, little attention appears to be paid by health professionals to sexual functioning as part of the rehabilitation process [3,5,6]. While sexual wellness is understood to contribute to well-being and quality of life [7], only a few publications were found examining sexual function in post-stroke individuals [5]. In the classic contemporary text on stroke diagnosis and management [8], only five lines are devoted to the subject of sexual function and dysfunction in this population.

In this narrative review, we assess the literature regarding sexuality in post-stroke patients, contributors to sexual dysfunction, effect on quality of life, treatment considerations, and attitude of health care professionals in addressing sexuality in this population.

Methods

PubMed, PEDro, ISI Web of Science, and Google Scholar databases were searched from inception until December 2012 using predefined search strategy. The databases were searched for the key words "sex," "stroke," "sexual dysfunction," "desire," "orgasm," "intercourse," "sexuality," "quality of life," "post-stroke," "erection," "sexual satisfaction," "stroke rehabilitation," and their combination. Criteria for inclusion in the review were use of any type of research on prevalence, etiology, natural history, evaluation, and treatment of sexual dysfunction of post-stroke patients. Trials of any design and methodological quality were included. No language restrictions were imposed. The reference lists of all articles retrieved in full were also searched. In addition, we consulted experts in rehabilitation medicine and sexology to produce this review on sexual dysfunction of post-stroke patients. Recognizing that sexual function is multifactorial and influenced by biological, psychological, relational, and sociological factors, we specifically report on the following domains: impact of stroke on sexual activity, frequency and sexual satisfaction, physical barriers to sexual activity in stroke patients, psychosocial aspects, comorbid factors related to sexual dysfunction, and attitudes of health care professionals regarding sexual function in post-stroke patients.

The search results were pooled and duplicates deleted. The titles and abstracts of all articles were reviewed. Full texts of potentially relevant articles were read, and their reference lists were searched for additional relevant articles. After excluding all irrelevant articles, a total of 27 publications were included in the review.

Results

Impact of Stroke on Frequency of Sexual Activity

A significant decline in sexual activities after stroke was reported in both male and female subjects [5,9,10]. Sjogren and Fugl-Meyer [11] evaluated 110 post-stroke subjects using interviews. For evaluation of changes in sexual ("leisure") activities, subjects indicated whether they had maintained, slightly decreased, markedly decreased, or ceased sexual activity participation. Approximately 68% of respondents reported decreased activity, and 32% reported a cessation of sexual activity. No significant difference between males and females was reported. Four recent cross-sectional studies from the United States, Italy, Korea, and Turkey evaluated the impact of stroke on sexual activity [12–15]. Collectively, they found that 14–50% of patients ceased sexual activity for 3 months after stroke. Patients, who continued sexual activity, reported commencing approximately after 3–6 months post-stroke, often concurrent with discharge from a rehabilitation facility. In another Turkish study of post-stroke patients with mild to no disability [10], significant decrease in coital frequency was found both in males and females, and 9% of the patients ceased engaging in sexual activity entirely after stroke. The difference between males and females was significant, with frequency of sex reported to be higher among male than female stroke survivors.

Satisfaction from Sexual Activity after Stroke

In addition to decrease in sexual activity, post-stroke patients also reported decreased sexual satisfaction. The study of 192 post-stroke patients and 94 spouses showed that pre-stroke satisfaction of 90% drops to less than 50% after stroke [9,13] with more dissatisfaction in post-stroke patients and less in their partners. Additional studies reported 42–70% of patients' dissatisfaction post-stroke [13,15,16], with greater satisfaction decrease reported in males than in females [15,16].

Several factors must be considered in assessing the data from these studies. Sexual satisfaction is difficult to define objectively, and the studied domains of sexual satisfaction as well as the scales utilized are varied. Data collection biases, gender differences, and context of the study, as well as meaning of sexual activity in different populations are important considerations as well.

Physical Barriers to Sexual Activity in Post-Stroke Patients

Physical barriers to sexual activity include general pain and mobility restrictions, which affect comfort and positioning, and/or specific sexual functioning domains of desire, arousal, orgasm, and genital pain. Most studies showed a direct association of decreased sexual activity after stroke with level of disability [13]. A British study of 110

post-stroke patients reported that level of independence in activities of daily living is the best predictor of sexual activity [11]. This was supported by research of 100 post-stroke patients from the United States that found a positive correlation between functional disabilities and sexual dysfunction, especially in male post-stroke patients [15].

On the other hand, studies of post-stroke patients with mild to no disability reported significant decreases in and difficulty resuming sexual activity, indicating that the factors contributing to sexual problems after stroke are likely multifactorial and difficult to isolate [10,17]. In a prospective Scandinavian, 6-month follow-up study of 50 post-stroke patients and their spouses [13], 55% of respondents indicated hemiparesis as the reason for their sexual difficulties, 29% reported spasticity, 19% reported sensory deficit, and 14% reported aphasia as the primary reason for ceasing sexual activity. In a 2002 Chinese study, post-stroke 63 men and 43 women with mild to no disability were asked to complete a questionnaire concerning pre- and post-stroke sexual function and habits [17]. Few males reported sexual dysfunction prior to the event. However after the stroke, more than 50% of males reported difficulties in erection and ejaculation. The women in this study reported 50% rates of sexual dysfunction prior to stroke; and after the stroke, the prevalence of sexual dysfunction significantly increased to 75%. While a third of the women reported difficulty achieving orgasms prior to experiencing a stroke, 50% of women reported orgasm difficulties after the stroke. While multiple factors contribute to sexual functioning, controlling for other variables, a history of stroke appears to be associated with a decrease in sexual functioning in both women and men [17].

Another problem of relevance to male post-stroke patients is erectile dysfunction (ED). The 1999 Korpelainen study reported that 75% of male patients experienced ED after stroke [9]. The same researchers, a year prior, measured the erectile response of patients post-stroke using a strain gauge attached around the penis and found that 45% maintained normal erection vs. 55% that had impaired erection [13]. None of the patients had lost erection completely after 6 months. The authors suggested that the presence of a device attached to penis provided sufficient feedback to the subjects to reexperience erectile function that was presumed to have been lost. Reviews from 1988 and 2009 [18,19] also suggested that little improvement has occurred in the last 30 years in overcoming physical barriers for regaining sex life after stroke.

Comorbidities Associated with Sexual Dysfunction in Post-Stroke Patients

Stroke is often correlated with poor health, and chronic illnesses are known to affect sexual functioning [20]. In fact, sexual dysfunction rates increased among patients with other medical problem. Pre- and post-stroke ED was more prevalent among patients with diabetes mellitus in comparison with other patients [9]. It is known that prevalence of ED in diabetic men is ≥50% [21]. The pathophysiology of diabetes-induced ED is multifactorial, and no single etiology is at the forefront. The proposed mechanisms of ED in diabetic patients include elevated advanced glycation end-products, increased levels of oxygen free radicals, impaired nitric oxide synthesis, increased endothelin B receptor binding sites and up-regulated RhoA/Rho-kinase pathway, neuropathic damage, and impaired cyclic guanosine monophosphate-dependent protein kinase-1 [21]. Disorders of erection and vaginal lubrication were more common in patients taking medications for prior cardiovascular conditions than in other patients [9]. In addition, medications used to manage the post-stroke comorbidities like depression, hypertension, and other heart problems were likely to have contributed to sexual dysfunction [22].

Significant direct correlation was found between sexual dysfunction and left hemisphere lesion [15]. This was supported by a study of 105 male stroke patients that found significantly higher prevalence of ED in patients with right hemiparesis (left hemisphere lesion) [19]. However, other studies found increased sexual dysfunction in men with right hemisphere lesions [23]. Moreover, a 2003 Italian study of 63 stroke patients found no correlation between sexual functioning and brain hemisphere, concluding that reduced sexual function must be attributed to multifactorial, and most importantly, psychosocial factors [14].

Relational Aspects of Post-Stroke Sexual Dysfunction

Sexual dysfunction and dissatisfaction are common not only in post-stroke patients but also in their spouses [9]. Libido changes after stroke are most highly associated with a general attitude toward sexuality as unimportant, and with sexual performance anxiety, specifically fear of ED [9,13]. Part-

ner's experiences as described in one qualitative study are exemplified as follows [3]:

> It's hard to get rid of that role [caregiver] and be a husband again.
>
> I don't know but I'm majorly struggling. I love him with or without the stroke. But there are things like helping him to do the bathroom, not very romantic.

Partners' narratives indicated that sexual change in the relationship had less to do with loss of the physical domains of sexual function, such as arousal, erection, and orgasm, and more to do with the overall context of the relationship itself, including role and identity change, and feelings of loss and grief for how things used to be. In the aforementioned qualitative study [3], it was reported that participants infused their discussion of sexual issues with stories about dealing with loss and managing significant functional changes. As was elucidated in a 1993 study [4], the significance of a specific functional activity is determined by the value that activity has to one's role identity. For example, post-stroke female homemakers reported the inability to prepare the main meal as extremely distressing because it is a basic task through which social roles and identity are delineated.

Changes in functional abilities, dependency, and loss of role identity have a deep impact on sense of self and self-esteem and as a result, on sexual confidence and functioning. Stroke patients who regain sufficient function and efficacy in their primary roles are likely to experience improved sexual function as influenced by restored self-esteem [3,4].

Psychological Aspects of Post-Stroke Sexual Dysfunction

Depression, a common condition after stroke, was strongly correlated with sexual dysfunction [15]. A Korean study demonstrated that 78% of 67 post-stroke patients suffer from depression [2]. Authors of this study did not address all aspects of sexual dysfunctions, but they found that post-stroke depression appears to decrease sexual frequency [2]. Other studies confirm the correlation between post-stroke depression, anxiety, and sexual dysfunction [9,24]. In one study [13], fear of a new stroke was reported as a cause for ceasing sexual activity in 24% of the patients. Fourteen percent of male patients in that study reported fear of ED to be the main reason for ceasing sexual activity [13].

The role identity crisis and fear of failure are exemplified by the following:

> The major piece is how it feels to me in my head. That I just don't think that I can be a successful lover any more, and I hate that . . . I don't want to sign up for experiences of failure – and I had a lot of that since I had my stroke [3].

Men and women post-stroke with varying levels of physical dysfunction, who participate in sexual activity regardless of disability, may still report sexual satisfaction [14]. Suggested interventions, therefore, need not focus exclusively on solutions for physical obstacles but rather on alternate behaviors and activities that would help reestablish intimacy, focus on pleasure rather than performance, and improve self-confidence. An exploratory qualitative research study from the United States interviewing 15 stroke patients and their spouses [3] supported the aforementioned suggestion:

> Well, I was hoping that we could make love as we did in the past, but I don't get erections anymore like I used to, and my paralysis on the left side means that we can't . . . The positions we used aren't viable now, so I had to change that. And then we tried different approaches and that didn't work. I've tried being close to her, hug her a little bit on her cheeks and lips, and maybe touch her sexual organs, and that worked OK.

Attitude of Health Care Professionals toward the Sexual Dysfunction in Post-Stroke Patients

We found very limited literature on attitude of health care professionals toward sexual functioning in post-stroke patients. Schmitz's study of 29 patients reported that only one patient discussed sex-related issues with a physician [3]. Two patients reported that the subject was raised by a mental health professional. Despite experiencing little communication from staff members regarding sexual activity, most patients felt that the rehabilitation team should initiate discussion about post-stroke sexual adjustment. They speculated that the rehabilitation team, despite their professional training, had the same level of discomfort talking about sex as stroke survivors and their spouses.

Research exploring communication avoidance about sex by health professionals has indicated several major factors including time limitations, workplace regulations, and hesitation about embarrassing patients or themselves [6]. Schmitz's study indicates that patients perceive discomfort by their providers regarding the topic of sex. One empathetic male stroke survivor commented on the sensitive nature of sexual issues:

> I don't think they [doctors] are comfortable . . . Because I think it goes into the human nature part of a person . . . they are human too, the doctors are human too . . . I try to make my doctors, put them at ease, so they can talk, because they have information I need and I have information they need [3].

While health care workers may find the topic of sexuality difficult to raise, the studies above indicated that patients do want information and resources, and that knowledge of these resources may enhance their sexual functioning. A study from Korea [12] demonstrated that the knowledge possessed by patient and spouses on sexual function after stroke was directly correlated to sexual frequency and satisfaction. Another study [25] aimed to identify, describe, and analyze printable educational materials on sexual concerns that are available online and easily shared with stroke survivors. The authors concluded that in the absence of evidence-based interventions to address stroke survivor's sexual concerns, understanding the content of written educational material is important. Their analysis identified three predominant areas of content contained within the educational materials: problems experienced after stroke, suggested solutions, and reassurance about sex after stroke. However, there are some limitations to this method. Many issues that are raised in the written material lacked references [25]. Moreover, advice such as "talk to your doctor" may be insufficient because of the reported lack of training in sexual counseling among health care professionals [26]. Another study [5] showed that although the majority of rehabilitation staff had been asked for advice on sexuality issues during rehabilitation, most of them had received no training in this aspect of stroke rehabilitation since joining stroke services. The study found 10 of 13 professionals had never discussed sexuality with patients before joining a stroke unit, and 12 of 13 never received training in sexual counseling. Half of the sample admitted expecting to receive that information on training.

Discussion

All reviewed studies indicated that sexual dysfunction and decrease in sexual satisfaction are common problems in the post-stroke population. As sexual functioning is understood to be multifactorial, it was not surprising that the reasons indicated for decreased sexual activity were physical, relational, and psychosocial. These reasons follow the biopsychosocial paradigm for conceptualizing sexual problems and include general physical barriers, specific sexual functioning problems exacerbated by comorbid illness, medication and psychosocial factors, relationship stresses, role identity change, depression, loss, and anxiety.

However, the data indicate that with no gender differences, those who regained sexual activity in some way usually reported sexual satisfaction, whereas those who ceased engaging in sexual activity were not satisfied. This finding is significant for health care workers to consider in counseling patients regarding sexuality. As in many other activities, modifications may be suggested in the type of sexual activity, frequency, and nature of activity. Intimacy may be reframed to clients as touch, pleasure, and connection, while sexual functioning defined by the domains of erectile function and intercourse may be de-emphasized.

Barriers to sexual activity can be conceptualized as those due primarily to physical problems affecting the ability to engage in sex, such as decreased endurance, mobility, sensation, and general pain, and those related directly to the domains of sexual function, including arousal, erection, and orgasm. Rehabilitation staff, including physiatrist, speech, occupational, and physical therapists, can address the former barriers as they do other activities of daily living and can employ counseling using the permission, limited information, specific suggestions, and intensive therapy (PLISSIT) model [27]. Developed in the mid-1970s as a paradigm tor sexual counseling, education, and therapy, the PLISSIT model is a tool for both assessing and managing a patient's sexuality concerns. PLISSIT encourages health professionals to provide permission and reassurance, information, and specific suggestions regarding sexual concerns. Physical rehabilitation staff should be able to respectfully and sensitively question patients regarding their sexual functioning, anticipations, and expectations, as well as those of their partners. Rehabilitation specialists can learn to recognize and question patients regarding the domains of desire, arousal, and orgasm, and to provide referrals to sex therapy. Physical therapists trained in pelvic floor rehabilitation should be included on the rehabilitation team to assist patients who report pelvic or genital pain with sexual activity.

Psychosocial barriers may be addressed in patients and in spouses. The significant changes in family and social roles, including loss of role identity by the patient and the new caregiving role of the partner should be acknowledged [4]. Health care professionals can learn to recognize and help allay the common sexual concerns of patients including performance anxiety, fear of another

stroke, and depression. It has been suggested that mental health interventions be offered for patients and partners both separately and together in order to assist with reorganization and new homeostasis of roles [4].

Despite the aforementioned knowledge on sexual dysfunction in post-stroke patients, insufficient attention is given to this problem by health care professionals. Results of a study seeking existing material on line about sexual function after stroke discovered that solutions and reassurance were general, nonspecific, and often not supported by evidence [25].

Most patients experience the rehabilitation process without any discussion of their sexuality with professionals [26]. We suggest that sexuality be addressed early in the posthospitalization rehabilitation period and that health care practitioners, medical social workers, physiatrists, and physical and occupational therapists receive training in addressing sexuality in the treatment of post-stroke patients. Collaboration of rehabilitation professionals with sexual medicine specialists including sexologists and sex therapists may assist in addressing sexuality in post-stroke rehabilitation.

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