



Urogenital dysfunction and quality of life in women after stroke: Pilot study

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ABSTRACT

Introduction: Research shows that urinary and sexual dysfunction is very common neurological sequelae of stroke with a markedly significant impact on body self-image and quality of life. Still, there is a lack of recent research to address this problem in female stroke survivors. The study aimed to examine the existence and level of urinary and sexual dysfunction, quality of life, and self-reported body image in a group of women after stroke and compare findings with those found in a group of women with other chronic non-neurological diseases.

Methods: This study's sample consisted of 30 females; two groups composed of 15. The stroke group consisted of subjects after stroke and the non-neurological group with different chronic non-neurological, mainly muscle-skeletal conditions. This study's specific interest data were collected from respondents through pelvic floor distress inventory (PFDI-20), the pelvic floor impact questionnaire (PFIQ-7), female sexual function index (FSFI), and an eight-item body image scale (BIS). The SPSS v.26 program was used for statistical processing.

Results: Results show a statistically higher scores in stroke group ($M = 219.65 \pm 34.573$) on PFDI-20 than in non-neurological group ($M = 118.54 \pm 27.734$). Furthermore, statistically significant higher scores were found in stroke group in PFIQ-7 (Mdn = 233.33) and BIS (Mdn = 16.00) than in non-neurological group (Mdn = 28.57) – PFIQ-7; (Mdn = 11.00) – BIS. Also, statistically significant lower scores were found in stroke group (Mdn=10.40) on FSFI index than in non-neurological group (Mdn=24.60).

Conclusions: Women after stroke show significantly more urinary and sexual dysfunction, lower quality of life, and poorer body self-image than the non-neurological group of chronic non-neurological conditions. There is a clear need for research on this issue in women after stroke.

Keywords: sexual health; body image; quality of life; stroke; female; urogenital dysfunction

INTRODUCTION

Research shows that the lower urinary tract and sexual dysfunction are commonly reported sequelae of neurologic disease and significantly impact the quality of life (1). In the case of after stroke, the lower urinary tract symptoms are common neurological sequelae and negatively impact the mortality of patients with stroke and the quality of life of both patients and their caregivers (2). At the same time, associated post-stroke sexual dysfunction affects more than half of stroke patients, but it is an under-recognized and poorly managed condition, having a significant impact on mood and quality of life (3). Regarding gender, research shows no difference between females and males in the lower urinary tract dysfunction after stroke (4). Still, at the same time, females have a consistent significant higher prevalence

of sexual dysfunction than their male counterparts (5). Lack of training, tools, time, and limited treatment options prevent health workers from providing women with the necessary sexual health support. Educating women, training health professionals, and providing communication tools to health professionals can facilitate effective dialogue between patients and health professionals. Specifically, health professionals can be trained to initiate and maintain a sexual health conversation in a way that is pleasurable for women to convey sexual health needs and concerns, and for health professionals to properly identify, diagnose, and treat their patients' sexual problems (6).

Urinary dysfunction is a known predictor of stroke severity, and the prevalence of the lower urinary tract symptoms after stroke is higher in stroke patients than in the general population (7), as well as sexual functioning and sexual function, which are lower in post-stroke patients compared with healthy controls (5). The prevalence of urinary and sexual dysfunction among stroke patients and other health conditions is unclear at this time. Although urinary and sexual

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dysfunction is interrelated and significantly impacts the quality of life, there is a lack of recent research to address this problem. Research on this topic is inherent for successfully managing a commonly forgotten complication of stroke (3).

Another problem characteristic for post-stroke patients and interrelated to urogenital dysfunction is body image. Research indicates that self-reported body image is significantly negatively affected following stroke (8) and can alter sexual drive (9) in post-stroke patients. Therefore, it is also necessary to comprehensively address the patients' images of themselves to strengthen the rehabilitation plan. It is a well-known fact that stroke alters all biopsychosocial domains of an individual, so these alterations must be addressed and effectively treated, as they directly affect each other.

Given the lack of research on this significant and influential health problem, the study aimed to examine the existence and level of urinary and sexual dysfunction, quality of life and self-reported body image in a group of women after stroke and compare findings with those found in a group of women with other chronic non-neurological diseases.

METHODS

This pilot cross-sectional study was conducted in a home-based physiotherapy environment. The research was approved by the private Institution for Health Care and Rehabilitation in Zadar – Croatia and University of Applied Health Sciences in Zagreb – Croatia (no. 139:859571), whose jurisdiction is the physiotherapy of the subjects in this research. All respondents gave informed consent to participate in this study. Data were collected from April to October 2015. Participants were patients of community physiotherapy Vitalis in Zadar, Croatia and were approached and asked for consent to participate in this study.

This study's sample consisted of 30 females; two groups composed of 15. Target population was women having brain stroke episode in the past year with completed rehabilitation. Inclusion criteria for stroke group were existence of brain stroke episode in the past 12 months and attended rehabilitation for stroke condition. Inclusion criteria for non-neurological group were existence of non-neurological conditions requiring physical therapy, mainly muscle-skeletal conditions (myoma, bone fracture, rheumatoid arthritis, and lumboschialgia). Exclusion criteria for both groups were existence of conditions which cause disability.

The most essential socio-demographic and medical data were collected: Age and medical condition (stroke or non-neurological). This study's specific interest data were collected from respondents through validated and standardized self-assessment questionnaires. Pelvic Floor Distress Inventory (PFDI-20) was used to measure the degree of disturbance and discomfort caused by pelvic floor symptoms and pelvic floor impact questionnaire (PFIQ-7) to assess the impact of the present problems on the performance of daily activities and quality of life (10,11). On both questionnaires, a higher score indicates lower function. Female sexual function index (FSFI) was used for assessing female sexuality and screening female sexual dysfunction (12), where a higher score indicates better sexual function. An eight-item body image scale (BIS) modified from the original Hopwood questionnaire for female cancer patients (13)

was used to assess the experience and satisfaction of the respondents about the appearance of their bodies. Two questions regarding mastectomy were excluded since they do not represent stroke condition (8. *Have you been feeling the treatment has left your body less whole?* and 10. *Have you been dissatisfied with the appearance of your scar?*) A higher score indicates a lower self-image. All stroke participants were able to complete questionnaires without assistance,

The SPSS v.26 program was used for statistical processing. The normality of the distributions was checked with Shapiro–Wilk test. Since only scores that showed normal distribution in both groups were PFDI-20 scores, Student t-test was conducted to check for differences on those scores between groups. Scores in PFIQ-7, FSFI, and BIS were not normally distributed in both groups, and non-parametric Mann–Whitney test was chosen because of the small sample size to check for differences between groups on scores. Both tests were two-tailed. $p = 0.05$ was chosen to determine statistically significant difference between groups. Arithmetic mean, median, standard deviation, and interquartile range were calculated.

RESULTS

All participants filled out all questionnaires, so there were no withdrawals. The average age of the respondents in the stroke group was 56.33 ± 12.38 , and in the non-neurological group, 64.66 ± 12.89 years. There was no significant difference in age between groups ($t(28) = 1.744, p = 0.092$).

Before comparing two groups for differences, Shapiro–Wilk test was performed to check for normal distributions of scores in each variable in both groups with p value 0.05 marked as significant (Table 1). PFDI-20 scores were normally distributed in both groups, and for scores in remaining three questionnaires (PFIQ-7, FSFI, and BIS), normality assumption was violated in at least one group, so Student t-test for independent samples was calculated to check for differences in age and PFDI-20 scores, and non-parametric Mann–Whitney U test for independent samples was conducted to check for differences in PFIQ-7, FSFI and BIS scores since the sample is small ($n = 15$). To adjust for multiple testing for differences in four questionnaires, Bonferroni correction was applied resulting in p -value 0.0125 as significant.

The average PFDI-20 score was higher in the stroke group than in the non-neurological group. Student t-test (Table 2) obtained statistical significance, showing that participants who suffered stroke report worse disturbance and discomfort of pelvic floor dysfunction than participants from non-neurological group ($t(28) = 8.835, p < 0.0125$).

TABLE 1. Shapiro–Wilk test of normality

Variable	Group	Shapiro–Wilk	p
PFDI-20	Stroke	0.913	0.152
	Non-neurological	0.960	0.701
PFIQ-7	Stroke	0.943	0.422
	Non-neurological	0.861	0.025
FSFI	Stroke	0.842	0.013
	Non-neurological	0.982	0.983
BIS	Stroke	0.394	0.000
	Non-neurological	0.904	0.110

TABLE 2. Student t-test for PFDI-20 between groups

Variable	Group	n	M (SD)	t	CI	p
PFDI-20	Stroke	15	219.65 (34.573)	8.835	[77.669; 124.553]	0.000
	Non-neurological	15	118.54 (27.734)			

CI: 95% confidence interval

TABLE 3. Mann–Whitney test between groups

Variable	Group	N	Median (IQ range)	Mann-Whitney U	Z	p
PFIQ-7	Stroke	15	233.33 (219.048; 276.191)	0.00	-4.67	0.000
	Non-neurological	15	28.57 (19.048; 85.714)			
FSFI	Stroke	15	10.40 (7.600; 16.800)	21.00	-3.80	0.000
	Non-neurological	15	24.60 (18.400; 29.200)			
BIS	Stroke	15	16.00 (16.000; 16.000)	3.00	-4.76	0.000
	Non-neurological	15	11.00 (10.000; 13.000)			

To compare scores in remaining three questionnaires, Mann–Whitney U test was conducted (Table 3). Results showed that respondents from stroke group had statistically significant higher scores on PFIQ-7 questionnaire and BIS scale which indicate the lower function and lower self-image than respondents from non-neurological group. Furthermore, stroke group had statistically significant lower score on FSFI questionnaire, which indicates the lower sexual function.

DISCUSSION

The results from this study revealed that women who suffered stroke have far more disturbance and discomfort regarding pelvic floor symptoms, lower quality of life, more problems with sexual dysfunction and lower self-image. Research shows that urinary and sexual dysfunction is very common neurological sequelae of stroke with a markedly significant impact on quality of life. Evidence from the literature cited in the introductory part of this study shows that the prevalence of urinary dysfunction after stroke is almost equal between genders (4). Still, sexual dysfunction is more present in females (5). Literature to explain such phenomena is very insufficient; moreover, by reviewing recent literature, it is possible to find research that is much more dedicated to research on this issue in men than in women. Equally, it has been shown that the levels of urinary and sexual dysfunction are significantly higher in post-stroke individuals than in healthy ones (5,7), but we have not found relevant studies that address the existence of this problem and the difference between females after stroke and those with other chronic non-neurological conditions. This study shows that stroke patients have higher levels of urinary and sexual dysfunction than non-neurological patients. Self-reported body image is also known to be altered in stroke patients (8), and it is well known that self-body image is a sensitive topic in women. We must note that in the literature of older date, more space is devoted to the issue of urinary and sexual dysfunction as common neurologic sequelae. Is this perhaps because women in the past were more open for talking about this problem than today (which is very likely impossible), or maybe the problem of urinary and sexual dysfunction in women has not yet found a significant place in research, although its impact on quality life in women after a stroke is substantial? This is a question that should be answered with some other research. This study aimed to examine the existence and

level of urinary and sexual dysfunction, quality of life, and self-reported body image in a group of women after stroke and compare findings with those found in women with other chronic non-neurological diseases. The motivation for this study was precisely the fact that this problem was not given enough space in more recent research.

Women after stroke revealed statistically significant higher pelvic floor dysfunction in our research than respondents from the non-neurological group. Urinary dysfunction is highly prevalent in older women (14), but interestingly, despite being older than the stroke group, women in the non-neurological group reported much less dysfunction. In addition, to our findings, Thomas et al. highlighted in their Cochrane review that urinary dysfunction symptoms are more severe in stroke survivors than in other people with urinary incontinence (15). This may also be due to other factors related to stroke (reduced mobility, cognitive impairment, and recurrent events) and factors unrelated to stroke (medications, infections, detrusor overactivity, etc.) (16). Still, the same was not investigated in this study.

When it comes to quality of life and performance of daily activities, our respondents from the stroke group attached much more importance to the disturbance and discomfort caused by pelvic floor symptoms they face than the non-neurological group did. The previous studies have shown that urinary dysfunction is associated with poor quality of life. Sakakibara highlights that the daily activities of patients with brain lesions can be affected by creating a sense of fear, embarrassment, and guilt, and low morale and self-esteem (17) due to urinary dysfunction. Recent research by Akkoç et al. demonstrated that urinary dysfunction is prevalent and related to poor cognitive, functional status, and quality of life in stroke patients (18). Their findings are equal to those previously obtained by Miyazato et al.; urinary dysfunction causes a significant decrease in the quality of life by adversely affecting the patients' lives in every aspect (19). At the same time, Akkoç et al. study highlights insufficient data regarding the course of urinary dysfunction in stroke patients and their relation with functional and mental status.

Sexual function as an essential part of the quality of life in adults is altered in stroke survivors and under-recognized complication after stroke (20). Basson emphasizes that sexual function in female's proceeds in a more complex and circuitous manner than males and is more vulnerable

to psychosocial factors (21). Sexual function was significantly different in our stroke respondents than in the non-neurological group. This group consisted of younger women than the non-neurological group, so this result uncompromisingly requires attention. Unfortunately, we find no evidence to compare our findings in the recent literature. Park, Oviagele and Feng highlight that most sexual dysfunction and stroke prognosis research focus on male-related sexual dysfunction in animal and human studies. Future studies should focus on females, and young adults, because they also deserve substantially more attention (20).

The dominant view of women has changed radically during history, and these changes have had an essential impact on the way of life of women in general and, undoubtedly, on women as patients (22). Stroke survivors often experience stress, anxiety, and disturbances in body image (23). In a cross-sectional study on stroke survivors, Keppel and Crowe explored self-esteem and body self-image perception, which were significantly negatively affected (8). Stroke is characterized by brain damage, leading to physical and cognitive sequels, reduced abilities and changed appearance, so when it comes to women, the body of a female stroke survivor is quite different from the body of a healthy woman (22). Our female stroke survivors showed a high negative attitude about self-image compared to the non-neurological group. What is even more interesting is that one-fifth of the women in the non-neurological group did not have a single answer that shows a negative attitude about self-image. This could be explained through the prism of physical and cognitive sequels after stroke or the historical development and dominant view of women previously mentioned in the section. Still, ultimately, we will encounter a lack of literature and empiricism in the explanation. We emphasize the importance of the feminist perspective on health, disease, illness and sickness, which can introduce new ways of looking at problems and new answers for the rehabilitation of women after diseases such as stroke (22).

There are some limitations to this study. Sociodemographic data collected consisted only of age. Future studies could include other variables such as educational level, type, and duration of completed rehabilitation. PFDI-20 and PFIQ-7 were not validated for female stroke patients so generalization for that population is quite limited, but can give direction of differences between them and patients with other conditions. BIS scale was modified to better represent stroke patients, but this version was not validated on them, so it also limits generalization of results. Furthermore, regarding urinary symptoms results, those can partly be attributed to greater neurological impairment and represent difference in neurological and functional impairment in stroke patients than in non-neurological.

The field of research on this issue is rarely represented in certain population groups, such as athletes, so this research will encourage health professionals to focus on the assessment of athletes with neurological deficits (23). Research shows that sports with an aspect of impact, collision, or microtrauma can lead to subsequent stroke, although it is difficult to diagnose such consequences due to the longer interval before ischemia occurs (23).

CONCLUSION

The purpose of this study was to compare urogenital, sexual, and quality of life aspects in women suffered stroke and women with other non-neurological conditions. Our research shows that women who suffered stroke report more problems regarding quality of life, pelvic floor symptoms, sexual dysfunction, and low self-image. Neurological, physical, and psychological sequelae of stroke significantly impact women's quality of life. The contribution of our research is reflected in the findings on the existence and severe alteration of urinary and sexual function in women after stroke, as well as poor self-perception of themselves and their bodies. In the rehabilitation of women post-stroke, it is vital to address the above alterations. To strengthen the current study, it is necessary to increase the sample and include correlation methods to obtain the nature of the relationship of the observed phenomena.

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DECLARATION OF INTEREST

The authors declare no conflict of interest.

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