

Sexual profile and adaptations of men after spinal cord injury

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ABSTRACT

Spinal cord injury (SCI) refers to any type of injury to the neural elements of the spinal canal, resulting in countless damages, one of them being the change in patterns of sexual response, conditioned by physical, psychological, and social aspects. Due to these changes, patients need to make adjustments to maintain sexual activity. **Objective:** To verify the sexual profile and adaptations of men after SCI and to associate the neurofunctional diagnosis with sexual frequency, erection, use and type of adaptation, and the use of adaptation with sexual frequency and sexual satisfaction. **Method:** Cross-sectional study with 36 men with spinal cord injuries. They were interviewed with the (QSH-LM) questionnaire. **Results:** The mean age was 36.64 years old with the majority of injuries stemming from traffic accidents, resulting in paraplegia or complete injury. After the SCI, 52.8% of the subjects remained married, 75.5% maintained sexual activity, whereas 44.4% have less than one intercourse/week, 80.6% are sexually satisfied, 50% have erection, 38.9% ejaculation, and 44.4% orgasm. Regarding the use of adaptations to achieve and maintain an erection, 61.1% of the subjects use them, 25.5% because they fail to maintain an erection and 22% have opted for the penis ring. There was a significant association between paraplegics who use adjustments more frequently and prefer the penis ring and patients who use sexual adaptations having greater sexual frequency and being sexually satisfied ($p = 0.02$). **Conclusion:** Through this work it is possible to know the sexual profile of patients after SCI and the most used sexual adaptations. These results support the information that might assist healthcare professionals to monitor and guide their patients properly.

Keywords: Spinal Cord Injuries, Sexual Behavior, Men

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INTRODUCTION

Spinal cord injury (SCI) consists of any injury that occurs in the neural elements of the medullary canal, causing partial or total loss of voluntary motricity and/or sensitivity, in addition to compromising the urinary, intestinal, respiratory, circulatory, sexual, and reproductive systems.^{1,2,3} It is known that the functional alterations stemming from SCI vary from one individual to another, according to the type of injury, to the segment, and to the nervous pathways and spinal cord neurons involved.⁴ The worldwide prevalence is estimated at between 900 to 950 cases per million individuals, while the annual incidence varies from 30 to 40 cases per million individuals.⁵ In Brazil, 130 thousand individuals are affected by SCI⁶ with an estimated occurrence of approximately 40 new cases per million population, totaling from 6 to 8 thousand cases a year.⁵ SCI affects mostly males, especially young adults.^{7,8}

According to the American Spinal Injury Association (ASIA), patients with SCI can be classified by the type of injury, which can be complete when it reaches all the motor and sensory pathways and incomplete when it compromises only a few motor and/or sensory pathways.^{2,8} According to the medullary segment affected, lesions that occur in the thoracic, lumbar, and sacral segments trigger clinical presentations of paraplegia or paraparesis, leading to the motor and/or sensory compromising of the trunk and lower limbs or only of lower limbs, and lesions in the cervical medullary segments result in quadriplegia or tetraparesis, with motor and/or sensory alterations that affect the trunk and lower and upper limbs, compromising the general physical integrity.^{8,9}

Due to the disturbance of neural pathways, in addition to the evident neuromotor alterations, there is the alteration in the autonomic standards of sexual response, which depends on the segment and type of injury, conditioned by physical, psychological, and social factors.^{7,10} Difficulty in achieving and maintaining an erection can be observed as well as impeded or retrograde ejaculation; the sensation of orgasm can also diminish or disappear.^{10,11} Reduced or absent sensitivity in the genital area contribute directly to the occurrence of such impairments.⁷ The person with SCI has the sexual impulse totally intact,^{12,13} but due to the great psychological shock generated by the injury stemming from a series of changes in the appearance and functioning of the body, the desire may become repressed.^{7,14,15}

Due to the changes created in the sexual response patterns, these patients need to readapt sexually to maintain their sexual activity.^{11,15} The primary medical treatment for erectile dysfunction indicated is oral medication, however, when the objective is not achieved, intravenous medication is another alternative.¹⁵ In addition to medication, there are other resources such as the penis ring and the penile prosthesis, with the latter being an irreversible intervention.^{11,15} For the treatment of ejaculation, there are intrathecal and subcutaneous injections, transrectal stimulation, and penile electrovibration.^{11,15}

Sexual adaptations are indispensable after an SCI, for no matter how much the sexual impulse may remain hidden in the emotional imbalance that follows the injury, all the patients, within a few weeks or months, will also turn their attention to sexual activity.^{12,16}

OBJECTIVE

This study sought to verify the sexual profile and adaptations of men after SCI and to associate the neurofunctional diagnosis with the sexual frequency, erection, use and type of adaptation, and the use of adaptation with sexual frequency and sexual satisfaction post-SCI in patients seen at the Neurofunctional Physiotherapy services, Londrina State University Hospital/PR (HU/UJEL).

METHODS

This was a cross-sectional study with 36 male patients, 18 years old or older, diagnosed with spinal cord injury, classified either as quadriplegic or paraplegic according to ASIA standards, affected for at least six months, seen at the neurofunctional physiotherapy outpatient clinic at the Londrina State University Hospital (HU/UJEL), in Paraná, between February and October, 2012. In this study individuals were not included who were illiterate, were in the medullary shock phase, who had sexual dysfunction before the SCI, who had tetraparesis or paraparesis, who had other pathologies associated with SCI such as cranioencephalic trauma and myelopathies to be clarified, who had a diagnostic possibility of SCI, or medullary syndromes.

Information was collected via two questionnaires. The first was the *Questionário de Sexualidade Humana na Lesão Medular* (QSH-LM) (SCI Human Sexuality Questionnaire

SCI-HSQ).¹¹ The instrument is composed of 67 open and closed questions and was developed in three parts. The first part is the Anamnesis, which seeks to obtain personal information from the individual as well as the characteristics of the injury. The second part is made up of questions on the period before the injury, with four blocks of questions about: Sexual Activity, broaching the practice of sexual relations and their frequency; Sexual Drive, related to the will/desire to have sex; Sexual Satisfaction, questioning the presence of satisfaction during the sexual activity; and Sexual Response, regarding erection, ejaculation, and orgasm in addition to asking about the use of any adaptation to contribute to achieving and maintaining erection. The next part refers to the post-injury period, which focuses on Sexual Counseling: whether they received orientation on alterations in the sexual response after SCI, how these could be minimized, and whether the orientation would improve the quality of their sex life. The last part, Sexual Adjustment, asks how much the patient has adjusted in physical and psychological terms and how much he has adapted to the new situation. For this study, only 14 closed questions were analyzed and selected in accordance with the objective of this work.

The second questionnaire also approached the two periods in the life of the individual: pre and post-injury. It had four closed questions that sought to collect information referring to specific sexual adaptations used and the reason for using them during sexual activity.

All the participants initially signed a free and informed consent form and then received the questionnaires in an opaque and sealed envelope, being oriented to answer at home and return them when convenient, without identification, into an urn made available at the clinic.

The quantitative variables were shown by mean and standard deviation after the application of the Shapiro Wilk normality test. To answer the objectives of the study, the relative and absolute frequencies were calculated. The Chi-square test and the Fisher's exact test were used to associate the neurofunctional diagnosis with the sexual frequency, erection, use of adaptation, type of adaptation, and the use of adaptation with sexual frequency and post-injury sexual satisfaction. The results were shown in tables. All the tests were made at the level of significance of 5% ($p \leq 0.05$) and the data were tabulated in the program *Statistical Package for the Social Sciences* (SPSS)[®], version 17.0 for *Windows*.

This study was approved by the Research Ethics Committees at the Londrina State University - UEL, with approval 260/10 - Research Group: Evaluation and intervention in Physiotherapy registered with the *Conselho Nacional de Pesquisa* (CNPQ) (National Research Council).

RESULTS

The mean age of the 36 males was 36.64 ± 9.95 years, from which 26 (72.2%) were paraplegic and 20 (55.6%) had complete spinal cord injury. The mean time with SCI was 9.34 ± 7.31 years and the main cause was traffic accidents, affecting 17 (47.2%) individuals (Table 1).

As for marital status, the majority of patients, 19 (52.8%), were married and 3 (8.3%) were separated (Table 2).

After the SCI, 27 (75%) patients maintained an active sex life, with 16 (44.4%) having sexual relations at least once a week (Table 3).

As for sexual satisfaction, 29 (80.6%) patients felt satisfied after the SCI and 7 (19.4%) were not satisfied.

Regarding sexual response, after the SCI, 18 (50%) patients had spontaneous erection, 14 (38.9%) ejaculated, and 16 (44.4%) achieved orgasm (Table 4).

After SCI, 22 (61.1%) patients used devices to have/maintain an erection, with most choosing the penis ring (22.2%) and oral medication (19.4%); of those, 9 (25%) could not maintain the erection (Table 5).

Regarding the association of the neurofunctional diagnosis with sexual frequency and with erection, there was no statistically significant difference with $p = 0.50$ and $p = 0.45$, respectively. However, there was a statistically significant association that the paraplegics use adaptations more frequently ($p < 0.01$) and preferred to use the penis ring as an adaptation ($p < 0.01$). Another statistically significant association was that the patients with SCI who used sexual adaptations increased their sexual frequency ($p = 0.03$) and were sexually satisfied ($p = 0.02$) (Table 6).

DISCUSSION

The results found in this study showed that most individuals with SCI are young, with paraplegia and with complete spinal cord injuries. Similar data were found in the work by Silva et al.⁴ where the mean age was 36 years, with 85.1% of the individuals paraplegic, and 66.2% with complete injury. Other studies are

Table 1. Characteristics of the patients

	Frequency	%
Neurofunctional Diagnosis		
Paraplegia	26	72.2
Quadriplegia	10	27.8
Type of spinal cord injury		
Complete	20	55.6
Incomplete	16	44.4
Etiology of the spinal cord injury		
Traffic accident	17	47.2
Gunshot wound	13	36.1
Work accident	03	8.3
Diving into shallow water	02	5.6
Falls	01	2.8

Table 2. Marital status of the patients after SCI

	Frequency	%
Married	19	52.8
Single	09	25.0
Stable union	05	13.9
Separated	03	8.3

Table 3. Sexual activity of patients after SCI

	Frequency	%
Active sex life		
Yes	27	75.0
No	09	25.0
Sexual Frequency		
Less than once a week	16	44.4
2 times a week	10	27.8
1 time a week	04	11.1
3 times a week	03	8.3
7 times a week	02	5.6
5 times a week	01	2.8

Table 4. Sexual response of patients after SCI

	Frequency	%
Spontaneous erection		
Yes	18	50.0
No	18	50.0
Ejaculation		
Yes	14	38.9
No	22	61.1
Orgasm		
Yes	16	44.4
No	20	55.6

Table 5. Use of adaptations by patients after SCI

	Frequency	%
Uses adaptation to initiate/maintain erection		
Yes	22	61.1
No	14	38.9
Adaptation used to initiate/maintain erection		
None	14	38.9
Penis ring	08	22.2
Oral medication	07	19.4
Penile prosthesis	04	11.1
Intravenous medication	02	5.6
Oral + intravenous medication	01	2.8
Reason to choose the adaptation		
I don't use one	14	38.9
Could not maintain an erection	09	25.0
Others	09	25.0
Not happy with the quality of the erection	03	8.3
Could not initiate an erection	01	2.8

Table 6. Association of neurofunctional diagnosis with sexual frequency, erection, use of adaptation, and the type of adaptation after SCI; also associating the use of adaptations with sexual frequency and sexual satisfaction

Variables	Chi-square	p Value	Fisher
Neurofunctional diagnosis			
Sexual frequency	4.34	0.50	---
Erection	0.55	0.45	0.35
Adaptation	8.81	< 0.01*	< 0.01*
Type of adaptation - penis ring	15.70	< 0.01*	---
Use of adaptation			
Sexual frequency	11.75	0.03*	---
Sexual Satisfaction	5.53	0.19	0.02*

* statistically significant

also in conformity, showing a mean age for those with SCI between 30 and 40 years^{17,18,19} and the prevalence of paraplegia and complete injuries.^{8,20,21} Conversely, Dahlberg et al.²² showed quadriplegia (51%) and incomplete injuries (52%) as being the majority, after interviewing 92 patients. The main causes of SCI shown in the present study were traffic accidents, followed by gunshot wounds. Conceição et al.²⁰ and Custódio et al.²¹ demonstrated similar results, with the same variables as the main causes. Different data were found by Brito et al.²³ that reported falls (42.6%) as the main cause. The current literature affirms that most victims of SCI are males affected in the most productive phase of their lives. This can be explained in view of the etiology of traumatic injuries, stemming mainly from the increase in traffic accidents and violence to which young males are more exposed.^{4,18,20}

In this study as well as in other ones, being married was prevalent among those affected by SCI,^{7,24} however, there are other studies that bring us information on single people.^{9,15,25} Authors affirm that persons with SCI marry less frequently than the general population and that this may be due to reduction in social contact.¹¹ Another study states that after being married, the first predictor associated positively with the duration of the marriage after the SCI is the positive evaluation of health, and the second is the higher level of social integration and, contrary to what was expected, no relation was found between the neurological level of the injury, the level of functional independence, and the degree of independence in locomotion for the performance of daily activities, which showed no relationship with maintaining a conjugal bond.²⁵

In the present study, the vast majority of individuals had an active sex life after the trauma. Reitz et al.²⁶ affirm that, of the 47 participants in their study, 27 (57.5%) reported having sexual relations after the SCI. Another study showed that 76% of the males reported having sexual relations since the SCI and that a total of 68% had been sexually active during the last 12 months.²² Although most participants had an active sex life, studies show that the sexual frequency diminishes after the SCI.^{13,26-29} Another study shows two motives in particular that reduce sexual frequency: physical limitations and reduction in sexual ability.¹¹

Regarding sexual satisfaction, in the present study, most felt satisfied after the SCI, with this result being superior to the one reported by Mendes et al.³⁰ that reported 19 (47.5%) males being sexually satisfied in the period after the SCI. This and other studies report that after the SCI, males remained sexually satisfied.^{6,11,26,31,32} Some authors consider that the occurrence of sexual satisfaction implies a greater number of correlations with psychological factors than with physiological ones.⁷ Among the physiological and psychological factors described are: loss of sensitivity and motility, lack of sphincter control, difficulty in reaching orgasm, and low self-esteem.^{7,33}

The literature states that orgasm and ejaculation are more vulnerable than the erection, placed in a hierarchical sequence in the following order (more affected-less affected): orgasm, ejaculation, and erection,¹¹ in contrast with what was found in the present study: ejaculation, orgasm, and erection. Similar to the results of this research, one study³⁴ affirms that 60% of the patients had recovered their erection after the SCI, while Ramos et al.³⁵ found that 80% of the patients had erections after the SCI. The erection depends on a combination of the reflex and psychogenic actions and whether they are compromised in the SCI, which will change the erectile response of these patients, as will the influence of psychological factors.^{7,34}

Similar to this study, Reitz et al.²⁶ report that 36% of the males were capable of ejaculating after the SCI. Conversely, another study reports that only 15% of the males were capable of ejaculation after the SCI.³⁵ Disagreeing with the present studies and with the other studies mentioned, one study affirms that for most patients with SCI, the functions of erection and ejaculation are preserved.³⁶ The ejaculation - exit of the seminal liquid through the urethra to the external environment - has its command located in the S2-S3-S4 segments, and depends not only on the integrity of the

sacral region, but also of the sympathetic region situated between T11 and L2, responsible for the emission - exit of the seminal liquid from the seminal vesicle, prostate, vas deferens, and bladder neck to inside the urethra - and on the psychological aspects that jointly contribute in a unique manner to the occurrence of this activity, being a complex mechanism that can suffer countless alterations due to the SCI.¹⁵

In agreement with the present study, Everaert et al.³⁷ affirm that orgasm is seen in 40-50% of those with SCI. Garret et al.²⁷ found that 74.3% of the participants revealed that, after the SCI, they had never experienced orgasm nor anything similar. One study supports the importance of the hypothesis that the factors involved in an orgasm are mostly subjective, being more related with cognitive than with sensory characteristics per se.⁷

In the present study, relative adhesion was observed to the use of devices that aid the stimulation/maintenance of the erection, similar to a previous study that reported 59.8% of the participants had already used some medication or device to reinforce erection, and of those, 22.1% had already tried a method, 18.6% had tried two methods, and 19.1% had tried three or more methods; apparently, among the medications, those taken orally were the most used (49.2%) and among the devices, the penis ring (20.1%) was preferred, coinciding with the preference of this study.²⁸ In the same study, however, in an interview made later, it was found that only 23.1% of those interviewed remained without using some device during the period, 28.6% chose to use oral medication, 7.5% chose intravenous medication, 3.5% chose the penis ring, 3% chose the vacuum penis pump, 1.5% chose the penile prosthesis, and 1% chose some other means. Some individuals (12.6%) used a combination of two or more options.²⁸ In another study, 50% of the participants preferred the vacuum penis pump and intravenous medication.²⁹ Studies say that the frequency of use of penile prostheses is diminishing due to the improvement of oral medications, and in this study a minority of patients chose the penile prosthesis, and the third option was for devices.^{7,29} The therapeutic means used to allow an erection and the sexual activity of those with spinal cord injury must be suited to the type of difficulty found, depending on the level and extension of the injury. The adaptation chosen will be the one that causes few side effects and that presents the most satisfactory responses to the purpose.⁷

In this work no statistically significant difference was found for the association between the neurofunctional diagnosis, the sexual frequency, and with penile erection, as well as in the study by Baasch¹¹ that associated the same variables and did not find any statistical difference for both sexual frequency and erection. It is believed that quadriplegic patients have more difficulties in maintaining an erection, from the physiological point of view, due in most cases to the impairment of the psychogenic center. It was expected that they would show greater alterations in sexual frequency and erection after the SCI and that paraplegic patients would show greater sexual frequency and less difficulty in starting and maintaining an erection. This finding is related to the small number of participants of the study.

A statistically significant finding in this study was that paraplegic participants used adaptations more frequently and preferred to use the penis ring more than the quadriplegic participants. This is justified by the fact that the paraplegic patients had fewer disabling alterations and fewer repercussions on their body image and self-esteem, which may have contributed to greater interest in new forms of performing sexual activity. The motor disability of the upper limbs in quadriplegic patients could also be a limiting factor in the use of sexual adaptations, for they need the help of their partners to use them, which could be embarrassing and unwanted by the patients. As for paraplegic patients' preference for the penis ring, it is understood that they may have some impairment of the erection's psychogenic center, which would make the erection last a shorter time and need this adaptation to contribute to this phase, in addition to it being an easy to use adaptation by these individuals because they have no impairment in their upper limbs.

There was a statistically significant association between the patients who used a sexual adaptation changing their sexual frequency and being more satisfied sexually. Both facts are due to the benefits that sexual adaptations bring to individuals with SCI, making sexual activity more pleasant and even similar to the pre-injury period, and again being something expected and desired by patients, because their expectations have been met.

CONCLUSION

It was concluded that individuals with SCI are mostly young, with paraplegia and complete injuries caused mostly by traffic

accidents, and are married. Even after the SCI, the participants maintained an active sexual life, with a frequency of once a week being most prevalent, and are sexually satisfied. The erection is the least affected sexual response, followed by orgasm, and ejaculation.

Regarding the use of artificial resources to have/maintain erection, in the post-injury period, there was considerable adhesion of the patients, with most of them using the resource because they could not maintain an erection for enough time and preferred the penis ring as an adaptation. The paraplegic patients used adaptations more frequently and preferred the penis ring. The patients who used sexual adaptations have increased their sexual frequency and are sexually satisfied.

This work of learning the profile of patients after an SCI, the sexual adaptations used, yielded results that may help health professionals to monitor and guide their patients more appropriately. We suggest the creation of programs that provide counseling and clarify doubts through lectures, meetings between couples, and booklets, showing the changes that occur after the SCI and the existing adaptation resources. In this way, we may fill in the gaps of information and concomitantly work with the prejudices and conflicts, in order to rekindle the trust of SCI patients to reassume a positive sexual and social role.

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