

Original Research Article

Reproductive health related complications of spinal cord injury among patients at a specialized center in Bangladesh

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Received: 15 July 2023

Revised: 08 August 2023

Accepted: 16 August 2023

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ABSTRACT

Background: Our objective was to find out the reproductive health related complications among spinal cord injury patients.

Methods: A cross sectional study was conducted at the Center for the Rehabilitation of the Paralyzed (CRP) in Savar, Dhaka, Bangladesh from August 2017 to July 2018. A total of 289 patients, both indoor and outdoor, with spinal cord injury were randomly selected. The study aimed to examine reproductive health complications associated with spinal cord injury. Data was collected using a questionnaire and analyzed using SPSS version 20.

Results: Among 220 (76.1%) were male and 69 (23.9%) were female. In 15-35 (68.1% and 91.2%), 47 (68.1%) participants had menstruation problem. 42.1% had autonomic dysreflexia and 57.9% had UTI as pregnancy related complications. In sexual activity 52% had difficulties having intercourse, 20% had difficulties to reach orgasm and 28% had dry sex. In male participants after SCI 70.5% had erection problem and 78.6% had ejaculation problem. Participants who had erection problem, most of their neurological level was thoracic level 84.51% and in case of ejaculation also their neurological level was thoracic level 81.50%.

Conclusions: Awareness of sexuality and reproductive health after SCI has grown among healthcare professionals and individuals with spinal cord injuries. This recognition emphasizes the importance of open discussions, active listening, and education to enhance the quality of life for those affected by spinal cord injury.

Keywords: Complication of SCI, Physiotherapy in reproductive health, Reproductive health, SCI rehabilitation, Spinal cord injury

INTRODUCTION

Spinal cord injury (SCI), whether traumatic or non-traumatic, is a sudden and devastating neurological condition that has been addressed throughout history. The incidence of spinal cord injury is increasing over time, with an annual rate of 15-40 cases per million,

predominantly affecting males and individuals from low-socioeconomic groups. This condition not only leads to physical disabilities such as paralysis, sensory deficits, and bowel and bladder dysfunction but also to various complications including pressure sores, autonomic dysreflexia, deep vein thrombosis, spasticity, sexual dysfunction, and pneumonia.¹

Sexuality after spinal cord injury is an important aspect of making a healthy adjustment. Sexual expression is a fundamental part of human life and an integral component of our identity as men and women. People with spinal cord injury have the choice to engage in sexual activity or not. Additionally, spinal cord injury has a significant impact on both personal and national economies due to the condition itself and its associated complications, resulting in increased costs.²

Reproductive health is a significant component of sexuality. Many individuals with SCI have the desire to have a family and children, and maintaining reproductive health is crucial for overall quality of life and well-being. Even for those who do not wish to have children or already have children, maintaining reproductive health is still important. There are numerous ways to express sexuality after SCI, and various solutions exist to address any changes individuals may face. A consumer guide aimed at enhancing sexuality and maintaining reproductive health after SCI can help individuals explore all available options and possibilities.³

When treating individuals with SCI, it is essential to provide education about sexuality and fertility specific to the injury, as well as discussing the general effects of SCI on relationships. It is crucial for healthcare providers to approach this education with a positive attitude and consider the individual's personal needs, questions, life views, and context. Sexuality should be understood as an integral part of a person's life rather than a separate entity. Healthcare providers should also be aware of and responsive to the emotional reactions of individuals to the information provided.⁴

In order to achieve a sense of sexual well-being, individuals with SCI need to understand how their bodies function after the injury. This understanding can be gained through education, discussions with peers, masturbation, self-stimulation, or experimentation with a partner. Healthcare providers treating individuals with SCI have a responsibility to provide instructions and education tailored to the individual's needs and preferences. The primary cause of spinal cord injury is trauma resulting from falls, road traffic accidents, gunshot injuries, and sports injuries. Spinal tumors, tuberculosis (TB), and transverse myelitis (TM) are identified as the main non-traumatic causes.¹

Bangladesh, as a developing and densely populated country, has approximately 150 million people, with around 10% of the total population being disabled and 43% of them being physically disabled.⁵ The number of disabilities is increasing with population growth and aging. However, disabled individuals in Bangladesh are often deprived of social opportunities and their rights.⁶

Spinal cord injury is a catastrophic and devastating condition that primarily affects healthy and young individuals. It not only results in significant physical

disabilities but also has emotional and psychological impacts on the patients. Changes include the loss of motor function, inability to control bladder and bowel function, and compromised sexual functioning. Additionally, SCI has an impact on quality of life, life expectancy, and economic burden.⁷ These changes can profoundly affect an individual's social and interpersonal relationships within their community. Internationally, the incidence rate of SCI ranges from 10.4 to 83 cases per million population, with significant variations between countries and regions.⁸

Following SCI, most men experience impairments in sexual function and fertility, often due to erectile dysfunction, ejaculatory dysfunction, and abnormal semen quality.⁹ The level of injury in men with SCI affects erectile function, with sacral and thoracic-lumbar segments playing a modulatory role. Studies have shown that reflexogenic erections can be retained in men with complete lesions above the sacral segments, and even in those with injury to the conus medullaris and cauda equina. In women, a decrease in sexual intercourse frequency has been reported after thoracic spinal cord injury, but completeness of injury did not associate with intercourse frequency.¹⁰ Achieving orgasm after injury is influenced by the number of years post-injury, level of injury, and completeness of injuries.¹¹ hormonal status generally remains unchanged in women after SCI, temporary amenorrhea can occur. Some women with SCI are able to become pregnant and successfully bear children, but pregnancy in SCI women carries risks and is associated with higher rates of complications compared to non-SCI pregnant women. Complications include diabetes, urinary tract infections (UTIs), autonomic dysreflexia, pressure ulcers, worsening spasticity, and catheter-related issues.⁹

The current approach to best practices regarding sexuality and reproductive health in individuals with SCI is opinion-based and typically relies on clinical experience with small patient populations in select hospitals and rehabilitation facilities. Recognizing the importance of this topic for improving the quality of life for individuals with SCI, the consortium for spinal cord medicine has identified sexuality and reproductive health as a high priority area.¹¹

METHODS

A study conducted at a specialized center in Bangladesh aimed to explore reproductive health related complications of spinal cord injury (SCI). Data were collected based on inclusion criteria.

Inclusion criteria

Patients having spinal cord injury within their reproductive age group (15 years to 49 years) both male and female who were admitted to CRP indoor and took treatment from outdoor settings too.

Exclusion criteria

Acute spinal cord injury patients and mentally retarded patients were excluded.

A total 289 sample were collected randomly through convenience sampling method. The study spanned 12 months, from August 2017 to July 2018, and focused on patients at the spinal cord injury unit, neurology unit, and vocational training unit of the Center for the Rehabilitation of Paralyzed (CRP), Savar, Dhaka. During the study, stringent measures were taken to ensure data quality, consistency, and completeness. Data were carefully cleaned, edited, and verified daily before being coded and entered into the database. The collected data were analyzed using Statistical Package for Social Sciences (SPSS) version 20, and the results were presented through tables, graphs, and charts. Ethical clearance was obtained from both the ethical review committee of BUHS and CRP ethical review board. All participants provided informed consent, and confidentiality of their information was strictly maintained. The study followed ethical guidelines, and no harmful procedures were imposed on the participants. They also had the right to withdraw from the study at any stage or skip specific questions. The research commenced after receiving the ethical committee’s approval.

RESULTS

The study found that among the participants (n=289) patients with spinal cord injury, reproductive health-related complications were prevalent. The data analysis revealed a significant relationship between selected variables. The results were presented using tables, graphs, and charts. The study provided valuable insights into the reproductive health challenges faced by individuals with spinal cord injury.

Table 1: Participant characteristics.

Variables	Frequency	Percentage
Gender		
Male	220	76.1
Female	69	23.9
Age		
<15-35 years	213	73.7
36-55 years	65	22.5
>56-75 years	11	3.8

The study included a total of 289 participants with spinal cord injury. Among them, 220 (76.1%) were male and 69 (23.9%) were female. In terms of age, 213 (73.7%) participants were between the ages of <15-35 years, 65 (22.5%) were between 36-55 years, and 11 (3.8%) were between >56-75 years. These variables provide an overview of the gender and age distribution among the participants in the study.

Table 2: Complication after spinal cord injury.

Variables	Frequency	Percentage
Menstruation problem in female participants		
Menstruation problem	47	68.1
No menstruation problem	22	31.9
Menstruation problem types		
Menorrhagia	33	70.2
Amenorrhea	8	17
Dysmenorrhea	5	10.6
Menopause	1	2.1
Pregnancy complication after SCI		
Pregnancy complication	203	70.4
No pregnancy complication	86	29.6
Complications during sexual activity		
Complications during sexual activity	258	89.3
No complications during sexual activity	31	10.7
Specific complications during sexual activity		
Difficulties having intercourse	150	52
Difficulties reaching orgasm	58	20
Dry sex	81	28
Male participants		
Erection problem	154	70.5
Ejaculation problem	221	78.6
Childbearing after SCI		
No children after SCI	250	86.4

Approximately 68.1% of female participants experienced menstruation problems, while 31.9% did not. This highlights the significance of addressing menstrual health issues in this population. Among those with menstruation problems, menorrhagia was the most common issue (70.2%), followed by amenorrhea (17%), dysmenorrhea (10.6%), and menopause (2.1%). Understanding these specific complications helps in tailoring appropriate interventions and support. A substantial number (70.4%) of female participants with SCI experienced pregnancy complications. This highlights the importance of specialized care during pregnancy and childbirth for women with SCI. A significant majority (89.3%) of participants faced complications during sexual activity. This underscores the need for comprehensive sexual health education, counseling, and access to relevant healthcare services for individuals with SCI. Difficulties having intercourse were reported by 52% of participants, while 20% experienced difficulties reaching orgasm, and 28% faced dry sex. These findings indicate the importance of addressing sexual concerns and providing appropriate support and solutions. Among male participants, 70.5% experienced erection problems, and 78.6% faced ejaculation problems. These findings highlight the impact of SCI on male sexual function and emphasize the necessity of sexual rehabilitation and counseling. The vast majority (86.4%) of participants reported not having children after SCI. This could be due

to various factors such as fertility issues, challenges in conception, or personal choices. It underscores the importance of discussing reproductive choices and family planning with individuals with SCI.

Table 3 describe that among 69 participants 47 participants had menstruation problem where injury in cervical level was 19 (40.42%), thoracic level was 19 (40.42%), lumber level was 8 (17.02%) and sacral level was 19 (2.13%). Here neurological level is significantly associated with menstruation problem.

Table 3: Association between neurological level and menstruation problem of female participants.

Level of injury	Menstruation problem		Fisher's exact test value	P value
	Yes	No		
Cervical	19	13	39.654	<0.001
Thoracic	19	2		
Lumber	8	6		
Sacral	1	1		

Table 4: Association between neurological level and ejaculation of male participants.

Level of injury	Problem in ejaculation		Fisher's exact test value	P value
	Yes	No		
Cervical	3 (1.73%)	0	128.472	<0.001
Thoracic	141 (81.50%)	3 (6.38%)		
Lumber	26 (15.02%)	38 (80.85%)		
Sacral	3 (1.73%)	6 (12.76%)		

Table 5: Level of injury and sexual function.

Level of injury	Frequency	Menstruation problem	Difficulties having intercourse	Difficulties reaching orgasm	Dry sex	Erection problem	Ejaculation problem
Cervical	19 (6.57%)	19 (40.42%)	-	-	-	19 (12.34%)	3 (1.73%)
Thoracic	190 (65.78%)	19 (40.42%)	14 (76.9%)	8 (40%)	6 (85.71%)	131 (84.51%)	141 (81.50%)
Lumbar	75 (25.95%)	8 (17.02%)	5 (23.07%)	8 (40%)	-	18 (11.61%)	26 (15.02%)
Sacral	5 (1.73%)	19 (2.13%)	-	-	1 (14.28%)	3 (1.935%)	3 (1.73%)
Total	289 (100%)	47 (16.26%)	19 (6.57%)	20 (6.92%)	7 (2.42%)	171 (59.17%)	173 (59.86%)

Table 4 shows that ejaculation problem occur mostly the participants whose neurological level was in thoracic level 141 (81.50%) rather than lumber 26 (15.02%), sacral 3 (1.73%) level. Here neurological level was significantly associated with ejaculation problem (p<0.001).

Table 5 shows overview of the frequency and percentage of reproductive and sexual health issues among participants categorized by their level of injury. Among the total of 289 participants, 16.26% experienced menstruation problems. These problems were most prevalent among individuals with cervical injuries, affecting 40.42% of them. In terms of difficulties during sexual intercourse, 6.57% of participants reported facing such challenges. The highest percentage was observed among those with thoracic injuries, with 76.9% experiencing difficulties. Difficulties in reaching orgasm were reported by 6.92% of participants, with the highest percentage found among those with thoracic injuries (40%). Dry sex, characterized by reduced lubrication, was reported by 2.42% of participants, predominantly among individuals with thoracic injuries (85.71%). Erection problems were reported by 59.17% of participants, with the highest percentage among those

with thoracic injuries (84.51%). Similarly, 59.86% of participants experienced ejaculation problems, with the highest percentage found among those with thoracic injuries (81.50%).

DISCUSSION

A study in Bangladesh on 56 acute SCI participants found the most vulnerable age group to be 15-35 years, with higher male than female participants. 68.2% of males lived in rural areas, and 55.9% belonged to extended families. The age distribution peak was 16-30 years, accounting for 46.43%. Another study showed 75% of injuries occurred in the economically productive age group of 16-30 and 31-45 years.¹² A hospital-based study in India on 150 participants found the highest number of spinal injury cases in the age range of 20-39 years, with a mean age of 27.94 years. The most vulnerable age group was 15-30 years (57.7%). In a Bangladesh study of 56 participants, 84.0% were male. Male participants mainly had traumatic injuries (86.8%) like road traffic accidents (43.45%), while females had more traumatic injuries (97.1%) like scarf injuries (52.30%).

A study found that transportation accidents accounted for 23% of spinal cord lesions, sports injuries including diving for 17%, and iatrogenic causes for 4%. Non-traumatic causes included spinal tumors, Pott's disease, and transverse myelitis. In Bangladesh, a study revealed falls and road traffic accidents as the main causes of spinal cord injuries, with common non-traumatic causes being Pott's disease, spinal tumors, and transverse myelitis. Another study found that among 69 participants, 68.1% had menstruation problems, with associations between neurological level of injury and menstruation issues.¹³

A woman's menstrual cycle is usually disrupted and gynecologic dysfunction may occur. Secondary amenorrhea, menorrhagia, metrorrhagia, and neurogenic prolactinemia with and without galactorrhea. Other study shows that, 50-60% of women have amenorrhea acutely after SCI and another study shows that, Women generally have unchanged hormonal status, except for a temporary period of amenorrhea following SCI.^{14,15}

In this study, among 220 male participants, 70.5% experienced erection problems, and 78.6% had ejaculation problems after spinal cord injury (SCI). Interestingly, 86.4% of the participants reported not having any children after SCI. Erection problems were more prevalent among those with thoracic-level neurological injuries (84.51%), compared to lumbar-level (11.61%) and sacral-level (1.935%) injuries, showing a significant association with neurological level. Similarly, ejaculation problems were more common in participants with thoracic-level injuries (81.50%) compared to lumbar-level (15.02%) and sacral-level (1.73%) injuries, also showing a significant association with neurological level.

Studies in Denmark have shown varying rates of erectile dysfunction after SCI, with one study reporting 75% achieving erections and another study reporting erectile dysfunction in up to 75% of individuals with SCI.¹⁴ However, in the current study, 69.5% of participants experienced erection problems, and 82.2% had ejaculation problems after spinal cord injury.

In this study, 60.9% of participants had no children, while 29% had two children and 8.7% had one child. Vaginal delivery was observed in 44.4% of cases, and 55.6% underwent cesarean sections, with 59.3% of deliveries taking place in hospitals. Pregnancy complications were prevalent, affecting 70.4% of participants, with 29.6% having no complications. Autonomic dysreflexia was reported in 42.1% of cases, and 57.9% experienced urinary tract infections (UTIs).

During sexual activity, 89.3% of participants faced complications, including difficulties having intercourse (52%), reaching orgasm (20%), and experiencing dryness (28%). Women with thoracic-level injuries encountered more difficulties having intercourse (76.9%) compared to

those with lumbar-level (23.07%) or sacral-level (0%) injuries. Similarly, in reaching orgasm, thoracic-level (40%) and lumbar-level (40%) injuries were more common, with sacral-level injuries at 20%. Dry sex occurred more often with thoracic-level (85.71%) and sacral-level (14.28%) injuries. However, there was no significant association between neurological level and difficulties in sexual activities.¹⁴

Complete accuracy is not being possible in any research so that some limitations may exist. This paper was based on data obtained from a cross sectional survey and thus subject to the general limitations associated with cross sectional data. Regarding this study, there were some limitations to consider the result of the study as below: (1) as the study was conducted at a specialized center [Centre for the Rehabilitation of the Paralyzed (CRP)] which may not represent the generalized picture of the whole country. (2) Another limitation of this study was small sample size. The data was taken only in one year.

CONCLUSION

Healthcare professionals and individuals with SCI now recognize the importance of addressing sexuality and reproductive health after injury. Sexual satisfaction remains significant for people with SCI, who are experiencing improved medical and rehabilitative advancements, leading to longer and more independent lives. However, adapting to physical, social, and psychological changes poses challenges. The burden extends to both patients and caregivers. Pregnant women with SCI face increased complications. Raising awareness about these issues can enhance the quality of life for individuals with spinal cord injuries.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Nujhat M, Kamal SMM, Nazim AQ, Akter MF, Hossain MN, Uddin J, et al. Reproductive health related complications of spinal cord injury among patients at a specialized center in Bangladesh. *Int J Res Med Sci* 2023;11:3183-8.