



## Spinal Cord Injury: Causes, types of manifestation and related complications of the patients in northern division of Bangladesh

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### Abstract:

**Background:** This study explores Spinal Cord Injuries (SCI) in the Northern Division of Bangladesh, including its etiology, symptoms, and complications. The research focuses on this region to understand the etiology, varieties of SCI presentations, and the issues affected persons encounter. **Purpose:** to study the causes, symptoms, and complications of Spinal Cord Injuries(SCI) in Northern Bangladesh. **Methods:** In order to better understand Spinal Cord Injuries (SCI) among patients at Rajshahi Medical College Hospital and Rajshahi-CRP, Northern Division of Bangladesh, a quantitative cross-sectional descriptive design was used in this study. This convenience sample (n=300) includes patients who are undergoing treatment as well as those who have been discharged. Patients with SCI who have not had a head injury meet the inclusion criteria; patients who are unconscious or lack a diagnosis are not. Validated by a clinical physiotherapist, the data collection process uses semi-structured questionnaires and in-person interviews in accordance with ethical criteria that have been authorized by the ethical review board of Rajshahi Medical College. This ensures that patient care is not compromised. **Results:** The study had 300 participants, 80% male and 20% female, aged 20–50. About 42% were employed, mostly secondary school graduates, and rural residents. Trauma caused 64% of spinal cord injuries and paraplegia. 34% had pressure sores, while 92% had moderate discomfort. Urological and muscle problems affected 70% of patients. 68% of participants had psychological issues, including depression. Autonomic dysreflexia was 14%. **Conclusion:** This study illuminates the origins, symptoms, and complications of Spinal Cord Injuries (SCI) in Northern Bangladesh, providing useful insights for better management and care.

### Keywords:

Spinal Cord Injury, Manifestations, Complications, Rehabilitation



## Introduction

The prevalence of Spinal Cord Injury (SCI) worldwide, caused by factors such as road traffic accidents (RTAs), falls, and sports injuries, has risen in recent years [1,5]. In countries undergoing development, such as Bangladesh, the decline in road safety plays a crucial role in the increase mentioned [7]. Spinal cord injury (SCI) significantly reduces independence and leads to many consequences that affect motor, sensory, and autonomic functioning [2]. The presence of complications following a spinal cord injury, such as neurogenic bladder dysfunction, pressure ulcers, pain, and psychosocial problems, have a substantial impact on the quality of life and socioeconomic status of patients [3].

The scarcity of medical resources and insufficient healthcare availability worsen the problem of spinal cord injuries in underprivileged nations such as Nepal and India [4, 5]. Complications that occur after spinal cord injury (SCI) impede the process of rehabilitation, frequently resulting in the need for readmission to the hospital and higher healthcare expenses [2,4]. The poor outcomes can be attributed to the delayed commencement of rehabilitation and insufficient patient awareness [6].

SCI patients face increased risks during the period after being discharged from the hospital due to environmental obstacles and unsuitable surroundings [7]. Post-spinal cord injury (SCI), complications such as respiratory failure, septicemia, and deep vein thrombosis continue to be major contributors to illness and death [3,6]. Urinary tract infections and pressure sores are common among patients who have been discharged, impacting around 50% of the population [8].

The objective of this study conducted in the northern region of Bangladesh is to examine the etiology, symptoms, and potential problems experienced by patients with spinal cord injuries after receiving treatment. The study intends to provide critical insights into preventative and management techniques by examining demographic information, causes of injury, manifestation kinds, and numerous sequelae such as pressure sores, discomfort, urological disorders, and psychological repercussions. This evidence-based study aims to emphasize the significance of educating patients, making environmental adjustments, and raising awareness in order to reduce consequences and hence decrease the rates of illness and death associated with spinal cord injuries (SCI).

## Method

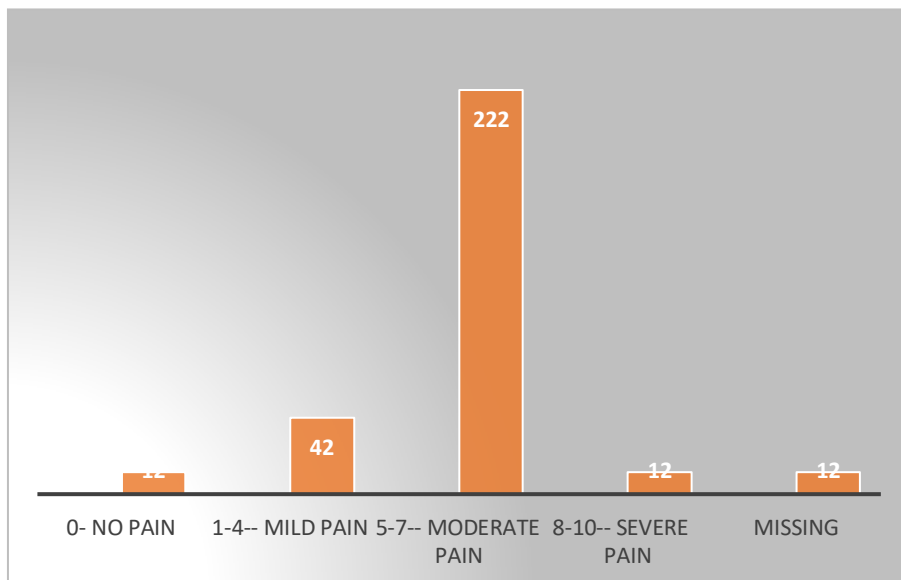
This study utilizes a quantitative cross-sectional descriptive design to examine the occurrence of Spinal Cord Injury (SCI) in patients residing in the Northern Division of Bangladesh. The study regions consist of Rajshahi Medical College Hospital and Rajshahi-CRP, which include both patients currently receiving treatment and those who have been released from the hospital. The study population comprises all patients with spinal cord injuries (SCI) who are undergoing treatment or are in the community after being discharged. The sample size consists of 300 individuals, selected via convenience sampling. The inclusion criteria give priority to individuals of both genders who have spinal cord injuries and are enduring problems. On the other hand, the exclusion criteria pertain to patients who are undiagnosed or unconscious, as well as those who have concurrent head injuries.

Data collection is conducted using a semi-structured questionnaire that has been validated by a clinical physiotherapist. This allows for face-to-face interviews and phone surveys. The survey encompasses demographic particulars, injury-related data, and diverse problems encountered by the chosen participants. The study protocol was submitted to the ethical review board of Rajshahi Medical College, with a focus on prioritizing ethical considerations. The study's objective was explained by

the patient guardians, who made sure that the research procedures did not interfere with the ongoing treatment of the patients.

### Results

This study involved a total of 300 participants and presented important data using several types of graphs and tables.



The gender distribution of the subjects showed that 80% (n=240) were males and 20% (n=60) were females, showing a greater susceptibility among males. The age distribution revealed that the largest proportion of individuals belonged within the 31-40 age bracket, accounting for 32% (n=96), followed by the 20-30 age group, which constituted 22% (n=66). An examination of occupational status revealed that 42% (n=126) of the individuals were employed, whereas 58% (n=174) were jobless.

Variable	Sub-point	Percentage
Gender	Male	80
	Female	20
Age	20-30 years	22
	31-40 Years	31
	41-50 Years	26
	51-60 Years	10
	61-70 Years	10
Occupation	Employed	42
	Unemployed	58
Causes of Injury	Traumatic	6
	Non- traumatic	94

Type of paralysis	Tetraplegia	64
	Paraplegia	36
Pressure sore	Yes	34
	No	66
Tone	Normal	10
	Spastic	46
	Flaccid	44

The analysis of educational status indicated that the largest percentage of individuals possessed a secondary education (48%, n=144), while a smaller number had a primary education (22%, n=66). In terms of residential areas, 74% (n=222) of the individuals lived in rural regions, whereas 26% (n=78) dwelt in urban areas. 94% (n=282) of injuries were attributed to traumatic causes, with paraplegia being more prevalent among 64% (n=192) of participants compared to 36% (n=108) with tetraplegia.

Regarding consequences, pressure ulcers afflicted 34% (n=102) of the individuals, whereas discomfort was experienced by 92% (n=276) of them. The majority of patients experienced significant discomfort (74%, n=222), while muscle-related issues were present in 80% (n=240) of people. Urological problems were observed in 70% (n=210) of cases, while bowel and bladder incontinence was reported by 80% (n=240). In addition, 52% of the participants (n=156) reported experiencing urinary tract infections, whereas 18% (n=54) encountered cardio-respiratory problems. Psychological problems were observed in 68% (n=204) of patients, with depression impacting 58% (n=174) of those individuals.

The use of figures and tables in this study offers a thorough depiction of the demographic characteristics, common problems, and difficulties experienced by individuals with spinal cord injuries after the initial trauma. This information is valuable for comprehending and tackling the intricate healthcare requirements of these patients.

## Discussion

The study conducted on 300 Spinal Cord Injury (SCI) patients in Northern Bangladesh aimed to explore socio-demographic information, injury causes, and post-SCI complications. The majority of participants were within the 31-40 years age range, with males comprising a larger percentage, indicating a higher vulnerability among men [8,3]. Urban-rural distribution showed a higher prevalence of SCI in rural areas. Participants mostly had secondary-level education and a significant portion were unemployed. Paraplegia was more prevalent than tetraplegia among the participants, and road traffic accidents were the primary cause of SCI. The study highlighted increased post-SCI complications, including pressure sores, pain, spasticity, joint stiffness, muscle atrophy, contracture, urological problems, and psychological complications. Pain, spasticity, muscle atrophy, pressure sores, urinary tract infections (UTI), and psychological issues were notably prevalent [9,10]. Factors contributing to increased complications included lack of awareness, economic constraints, and limited access to definitive healthcare facilities [6,8]. The multifaceted nature of complications post-SCI was evident, encompassing pressure sores, pain severity, altered muscle tone, joint stiffness, muscle atrophy, urological issues, and psychological challenges among SCI patients.

## Conclusion

The Northern Bangladesh Spinal Cord Injury (SCI) study illuminated key characteristics of this disorder. It found that road traffic accidents cause most SCI in the region, affecting 31-40- year-old men. Patients had pressure sores, pain, muscular tone changes, urinary tract infections, and psychological difficulties after SCI. Urban-rural distribution revealed rural SCI prevalence was greater. Post-SCI problems were also linked to socioeconomic characteristics, lack of awareness, and limited healthcare access. This study highlights the many obstacles SCI patients experience in Northern Bangladesh and the need for comprehensive initiatives to treat both its causes and effects.

## Authors Contribution:

MSI and MAH designed the study, prepare protocol. SA help in statistical part. RF review article and helps in writing, TH helps in writing and referencing.

## Patient consent:

Written consent was taken from all participants before intervention.

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