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Psychiatric Morbidity Among Patients Following Spinal Cord Injury

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Abstract
Objective: *The objective of the study wasto identify the prevalence of the psychiatric morbidity and to determine the types of psychiatric morbidity among patients following Spinal cord injury.*
Methods: *The study was a cross sectional, descriptive and analytical study carried out in theCentre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka; during the period from July 2011 to June 2012. A total 53 Patients aged 18 to 60 years, who suffer from Spinal Cord Injury of both sexes and meet the inclusion criteria considered as sample. They were assessed for psychiatric disorders by using validated Bangla translation of Structured Clinical Interview for DSM-IV Axis-I disorder SCID-CV.**Results:**Out of53 cases, a detectable psychiatric condition was present in 77.4% of the patients, including depressive disorder in 60.4%, generalized anxiety disorder 11.3%, post-traumatic stress disorder in 1.9%, and panic disorder without agoraphobia 3.8%. Analysis of response to other items of structured questionnaire showed that factors related to injury, family history of psychiatric illness, severity of injury, duration of injury; unemployment due to injury, found no association with psychiatric morbidity (p>.05).*
Conclusion: *Psychiatric morbidity among individuals with Spinal Cord Injury is significantly higher than general population which is potentially affecting treatment outcome.*
Key Words: *Psychiatric morbidity, Spinal cord injury, CRP*

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I. Introduction

Spinal cord injury is a certainly uncommon disorder which causes overwhelming psycho-social decompensation. Permanent paralysis of voluntary muscles and loss of sensation below the lesion which are the result of spinal cordinjury associated with reduced mobility and functional independence, impairment of social and vocational activities, as well as negative influences on the person's health and well-being.[1] In the world and even in our country disability caused by Spinal cord injury is not uncommon . Each year near about 800-1000 new spinal cord injury patients are added with the current number of Spinal cord injury patients in Bangladesh. The majority of people who face a Spinal cord injury commonly do so as a result of motor vehicle accidents, fall-related injuries (especially in the elderly), sports injuries and gunshot wounds.

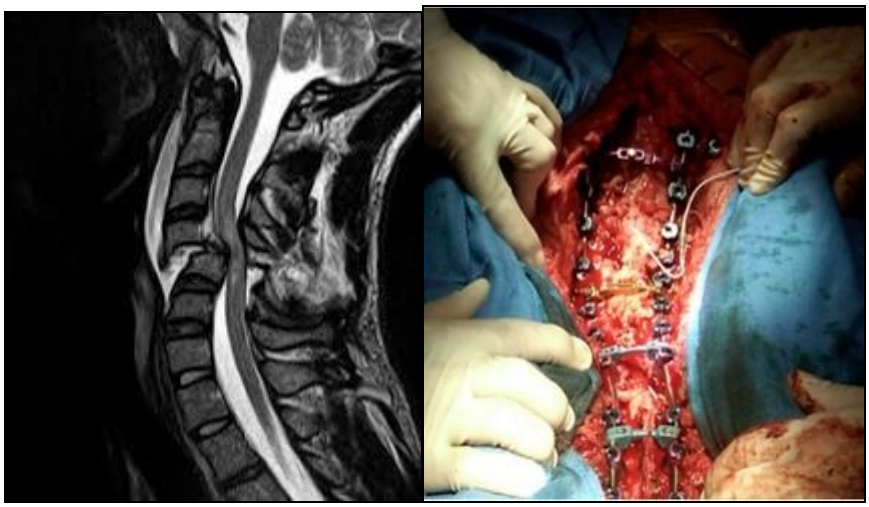

Fig 1a & 1b: shows Spinal cord injury and during surgery

In Bangladesh falling from the height is the most common cause of Spinal cord injury, accounting for 40.30%. Road traffic accident is the second most common cause of Cervical Spinal cord injury (23.9%)[2]. Spinal cord injury is a serious public health problem and frustrating to everyone who are affected by it. In psychiatric practice, high rates of psychiatric morbidity have consistently been found in this population, along with a suicide rate of 2-3 times greater than general population. The frustration caused by ongoing disability, the effects on functioning, and the impact on families and relationships contribute to significant psychiatric morbidity.In Spinal cord injury patientsthere is a variety of recognized psychiatric disorder found; among them the most obvious being depression and anxiety , but substance misuse and post-traumatic stress disorder are also commonly seen. In the United States reports show 46% with Spinal cord injury had either a Psychiatric disorder or Substance Use Disorder: 20% had Psychiatric disorder only; 12% had Substance Use Disorder only and 14% had both.[3]

II. Objectives of the study

The objectives of the study are follows:

- To identify the prevalence of the psychiatric morbidity among patients following Spinal Cord Injury.
- To determine the types of psychiatric morbidity among patients following Spinal cord injury.

III. Overview of Spinal Cord Injury (SCI)

The spinal cord is the major bundle of nerves connected to the brain that extends down the spinal canal formed by the vertebrae of the spinal column. When damage occurs to the spinal cord, sensory input, movement of certain parts of the body, and involuntary functions such as breathing can be lost or greatly impacted. When temporary or permanent impairment occurs due to damage to the spinal cord, it is classified as a spinal cord injury.[4]

Classes of SCI: There are two general classes of SCI:

Traumatic SCI (tSCI): Occurs when an external physical impact, such as that resulting from a motor vehicle accident, a fall, or from violence, damages the spinal cord defined traumatic SCI as an acute, traumatic lesion of the spinal cord with varying degrees of motor and/ or sensory deficit or paralysis. According to the American Board of Physical Medicine and Rehabilitation on Examination on Outline for Spinal Cord Injury Medicine, traumatic SCI includes fractures, dislocations and contusions of the vertebral column.[5]

Non-traumatic Spinal Cord Injury (ntSCI): Occurs when a health condition, such as disease, infection, or a tumour damages the spinal cord; that is, when damage is done to the spinal cord by means other than external physical force. The causal factors involved in non-traumatic Spinal Cord Injury include motor neuron diseases, spondylotic myelopathies, infectious and inflammatory diseases, neoplastic diseases, vascular diseases, toxic and metabolic conditions, and congenital and developmental disorder.[5]

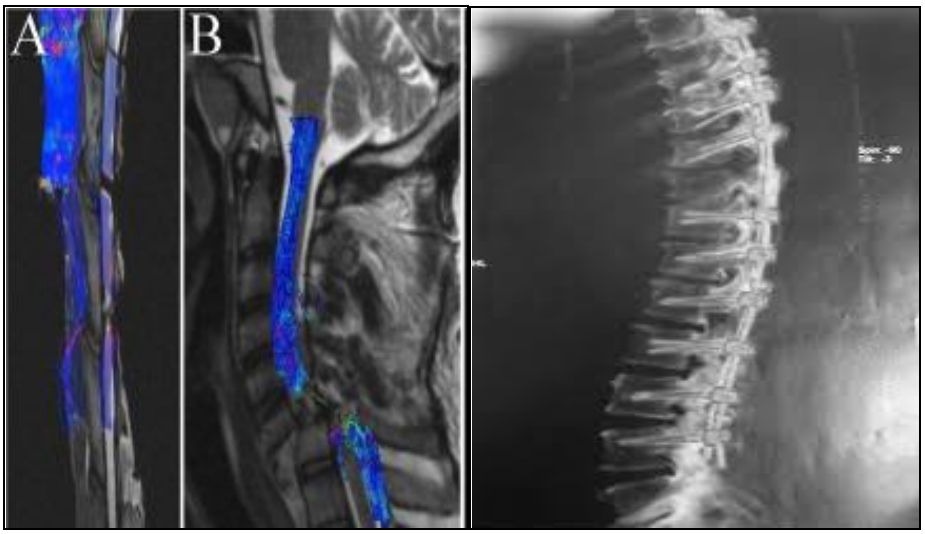

Fig2a & 2b: shows traumatic SCI and non-traumatic SCI

Global scenario of Spinal Cord Injury:

Worldwide prevalence of Spinal Cord Injury(SCI) has been estimated to range between 223 and 755 per million people, and because of improved survival rates, SCI prevalence is increasing.[6] SCI people in the United States, life expectancy of persons with SCI has been shown to increase over the past 30 years, with mortality rates reducing by approximately 40% in the first 2 years after the injury.[7]In Bangladesh disability caused by Spinal Cord Injury is not uncommon,near about 800-1000 new Spinal Cord Injury patients are added each year with the current number of SCI.[8]

IV. Materials and Methods

Type and place of the study:

This was a cross sectional, descriptive and analytical study and the duration of the study was one year (July 2011 to June 2012).The study was carried out in the Center for the Rehabilitation of the Paralyzed (CRP), Saver; Dhaka which is the only 100 bedded specialized hospital for the treatment of the paralyzed in Bangladesh.

Inclusion criteria:

•Both male and female patients who have significant neurological loss due to Spinal cord injury.
• Patients having age 18 years to 60 years.
•All the Spinal cord injuries were result of trauma.
•Only those patients with Spinal cord injury of more than six weeks duration after the injury (chronic phase) was included.

Exclusion criteria:

•Patient who was mute, stupors, non-communicable, non-cooperative and with serious medical condition.

Sample size and sampling technique:

Patients who suffer from Spinal Cord Injury, of both sexes who meet the inclusion criteria considered as sample from the Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka. Samples were selected purposefully and consecutively. Thetarget of sample size was 100. Some patients during the period of data collection, were refused to give consent; some were exhausted due to pain or other physical discomfort.Total 53 samples (both male and female) were taken from inpatient and outpatient department of the study place depending on availability during study period.

Research instruments:

a) Pre-designed structured questionnaire includes socio demographic variables of the patient were used. Data was collected by Bengali version of this questionnaire from the patients by face to face interview.

b) Diagnostic and Statistical Manual of Mental Disorder (DSM-IV) criteria was used for diagnosis psychiatric disorder. It is a new version incorporating minor revisions of the explanatory text- DSM-IV Text Revision (DSM-IV-TR) was published in 2000 and is referred to as DSM-IV-TR to distinguish it from the originally published in 1994. It contains a small number of textual changes and updates the classification as an

educational tool, but contain no significant alterations to the diagnostic criteria (American Psychiatric Association, 2000)[9].

c) SCID-CV (Structured Clinical Interview for DSM-IV Axis-I Disorder-clinician Version)

The structured clinical interview for DSM-IV Axis-I disorder (SCID-I) is a structured interview for making the major DSM-IV Axis-I diagnosis. Structured interviewing has been developed to increase diagnostic reliability through standardization of the assessment process and to increase diagnostic validity by facilitating the application of the DSM-IV diagnostic criteria and by systematically probing for symptoms that might otherwise be overlooked[10]. SCID is available in two versions: Clinician Version and Research Version. In this study Clinician Version was used for diagnosis of Axis-I disorder.

Procedure of the data collection:

Research instruments were applied to the study samples after pre-testing. Ethical issues related to the study were maintained strictly during study. Socio-demographic information of the patient was documented by using the structured questionnaire to identify the socio-demographic characteristics. Then SCID-CV was applied to generate DSM-IV Axis-I diagnosis.

Data processing and analysis:

Data analysis was performed by statistical package for social science (SPSS). The prevalence of psychiatric morbidity of patients with Spinal cord injury was estimated and appropriate test of significance was applied. Result was presented as text, tables, and figures.

V. Results

In this study, among the respondents 77.4% patients were found to have psychiatric morbidity in Axis–I diagnosis of DSM-IV. Specific psychiatric morbidity in this group was shown in table and figure.

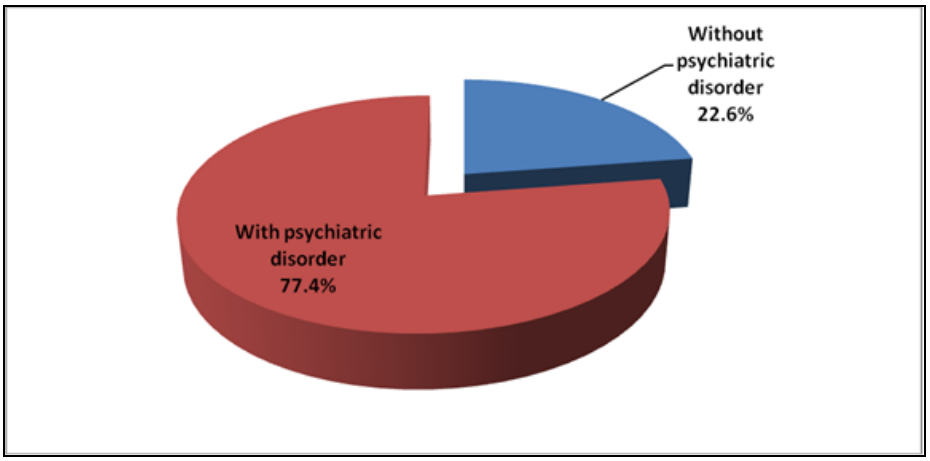

Figure 4: Proportion of psychiatric morbidity

Among total 53 patients, it was seen that 77.4 % had psychiatric morbidity and 22.6 % did not have any psychiatric morbidity.

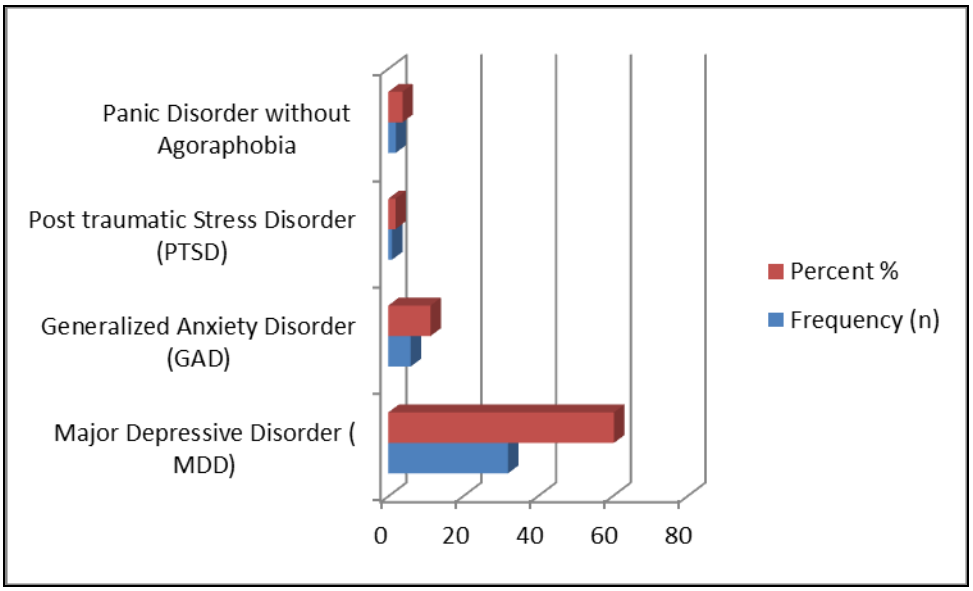

Fig 5: Distribution of patients by type of psychiatric morbidity (n=53)

Fig 5shows, among 53 of the total patients 60.4% were diagnosed as Major depressive disorder), 17.0% different type of anxiety disorders (panic disorder, PTSD, Generalized Anxiety disorder) according to DSM-IV.

Table 1: Distribution of patientsaccording to sex of patients

Variables	Psychiatric morbidity						p-value
	Without psychiatric morbidity		With psychiatric morbidity		Total		
Gender	n	%	N	%	n	%	
Male	12	26.1	34	73.9	46	86.8	.124
Female	0	.0	7	100.0	7	13.2	
Total	12	22.6	41	77.4	53	100.0	

P value reached from chi-square test, p>0.05 =not significant

Table 1: shows most of the patients (86.8%) were male and 13.2% were female. Regarding the morbidity level, the highest psychiatric morbidity (100.0%) was among female patients.

Table 2: Distribution of psychiatric morbidity according to duration of injury

Variables	Psychiatric morbidity						
	Without psychiatric morbidity		With psychiatric morbidity		Total		p-value
Duration of injury	n	%	n	%	n	%	
Below 6 months	4	18.2	18	81.8	22	41.5	.305
6 months- 1 year	5	20.8	19	79.2	24	45.3	
1 year- 5 years	1	25.0	3	75.0	4	7.5	
More than 5 years	2	66.7	1	33.3	3	5.7	
Total	12	22.6	41	77.4	53	100	

Data were analyzed by Pearson Chi-square test, P>.05= not significant

Table 2 shows the association between psychiatric morbidity and duration of injury. It was found that below six months duration 81.8% have psychiatric morbidity and 18.2% have no psychiatric morbidity. In 6 month-1 year duration range, 79.2% patient had psychiatric morbidity and20.8% have no psychiatric morbidity. More than 5 years duration 33.3% having psychiatric disorder. 1 year -5 year duration shows 75.0% psychiatric disorder. But size of the cell is too small to make a reasonable conclusion.

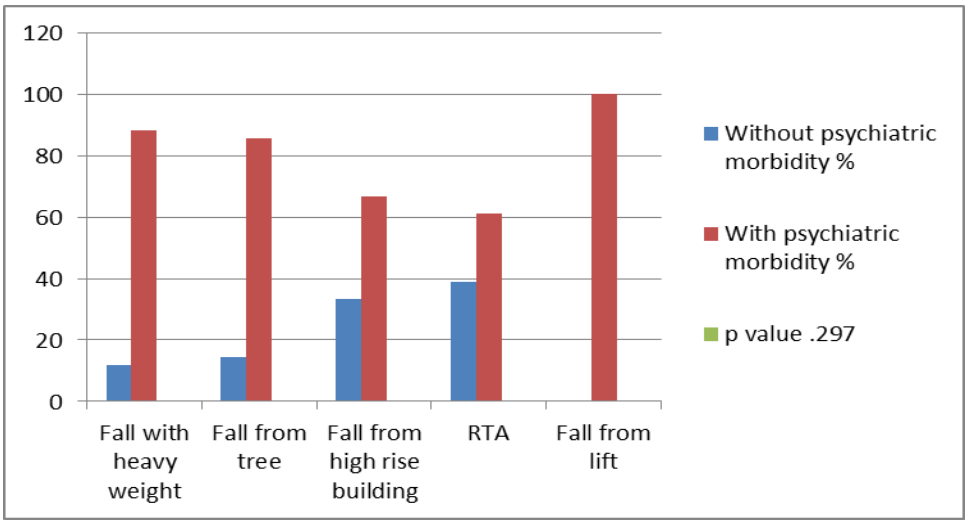

Fig 7: psychiatric morbidity and cause of injury

Data were analyzed by Pearson Chi-square test P>.05= not significant

Fig 6 shows the association between psychiatric morbidity and cause of injury. It was found that fall with heavy weight on head was 88.2% and have psychiatric morbidity and 11.8% have no psychiatric morbidity. In the cause of fall from tree, 85.7% patient had psychiatric morbidity and 14.3% have no psychiatric morbidity. Fall from high rise building 66.7% having psychiatric disorder. Road Traffic Accident group shows 61.1% psychiatric disorder. Fall from height was 100% have psychiatric morbidity.

VI. Discussion

In the present study shows that 77.4% of patients with Spinal Cord Injury had psychiatric morbidity and 22.6% had no psychiatric morbidity. In a previous study it was found that 18.3% of patients attending general practice were suffering from psychiatric morbidity[11]. Another study represents that 15.2% suffers from psychiatric morbidity in general population[12]. It signifies the high prevalence of psychiatric morbidity among this group of patients than general population. This may be due to more psychological stresses results from injury.

Prevalence and types of psychiatric morbidity:

A study by Wise*et al.* shows psychiatric disorder in medical or surgical patients were 20% to 80%, (anxiety and depression in various forms are common)[13]. Prevalence of depression- 3% to 6% in general population; male-3%, female- 4.5% to 9%[14].Our findings close to the study by Uddin*et al.*[15] where psychiatric disorder were 80.24% and 19.76%, of the patients suffering from depressive episode and generalized anxiety disorder respectively but another study done byKago*et al.* found 46% which were lower from our study results[16].

In the present study a detectable psychiatric condition was present in 77.4% of the patients, including depressive disorder in 60.4%, generalized anxiety disorder in11.3%, post traumatic stress disorder in 1.9%, and panic disorder without agoraphobia 3.8%. Prevalence of anxiety disorder in the general population- 2% to 5% (higher in woman), 5% to 20% medical in-patients and 4% to 14% medical out patients have anxiety state[14]. Previous study done by Johnson*et al.* found lower prevalence of generalized anxiety disorder (5%)[17]. This difference might be due to difference in the nature of instruments. Another study found 5% to 20% medical in-patients and 4% to 14% medical out patients have anxiety state which was closer to our study[18].Major depressive disorder was most common (60.4%) psychiatric disorder in current study. Almost similar results were found in the study done byMullick et al.[13]Kago*et al.* reported 23.4% were post-traumatic stress disorder, 17.2% were depression, alcohol dependence 1.6%, generalized anxiety disorder 5%, cannabis abuse 8% and somatization disorder in 7.5% in the patients[16]. This difference might be attributable to the nature of sample in these two studies.

In another study found, 46% with Spinal cord injury had either a Mental Illness or Substance Use Disorder: 20% had Mental Illness only; 12% had Substance Use Disorder only and 14% had both. The most common Mental Illness was depressive disorder (27%) and tobacco use was highly prevalent (19%) which was contrary of our study[17].

In the current study, Substance Use Disorder not found; it dose not reflect that substance is uncommon in Bangladesh. It may be due to concealment or social stigma related to substance abuse. In this study a small number of patients were suffering from panic disorder without agoraphobia (3.8%), and post-traumatic stress

disorder (PTSD) were 1.9%.Pollar et al. found 23.4% were post-traumatic stress disorder which was contrary to our study[16]. This high prevalence of psychiatric disorders might be explained by the fact that following Spinal Cord Injury, worrying about the financial support to the family versus treatment of Spinal Cord Injury can increase vulnerability to psychological stresses of patients is necessary to explore the hypothesis further. The objectives of the study achieved, that the proportion of psychiatric -Analysis of objectives in response to other associated factors related to injury of patients:

Analysis of response to other items of structured questionnaire showed that factors related to injury, family history of psychiatric illness, severity of injury, duration of injury; unemployment due to injury, found no association with psychiatric morbidity (p>.05).

In our knowledge, this is the first study in Bangladesh to explore psychiatric morbidity among spinal cord injury patients using sound methodology. However, the study has several limitations. The sample size was small. This study was cross sectional, so it could not provide the cause-effect relationship between caregiver burden and other variables.

VII. Conclusion

It can be concluded that many of patients with Spinal Cord Injury have higher level of psychiatric morbidity. In this study none of the depressed paraplegic and tetraplegic patients had received psychiatric treatment. This indicates lack of awareness about the existence of depression among the paraplegic patients. In the country like, Bangladesh where the patient is mainly cared for physically the study findings will be helpful to mitigate the psychiatric morbidity and as well as provide wellbeing for patients. Multi-centered broad based study with inclusion of large sample size only can confirm the findings of the present study.

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