

# Prevalence of Impairment, Disability and Handicap among Personnel Attending Centre for the Rehabilitation of the Paralysed, Bangladesh Agricultural University, Mymensingh

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## **Abstract:**

**Purpose:** To assess the Prevalence of impairment, disability and handicap among personnel attending Centre for the Rehabilitation of the Paralysed, Bangladesh Agricultural University, Mymensingh. **Objective:** To determine the Prevalence of impairment, disability and handicap among personnel attending Centre for the Rehabilitation of the Paralysed, Bangladesh Agricultural University, Mymensingh. **Methodology:** The study design was cross-sectional descriptive type of observational study. Total 322 samples were selected conveniently for the study from Centre for the Rehabilitation of the Paralysed, Physiotherapy unit, at Mymensingh, Bangladesh Agricultural University Center. Data was collected by using of questionnaire and prevalence of impairment, disability and handicap was assessed by the disability measurement scale and some health related questionnaire of impairment and handicap. The study was conducted by using quantitative descriptive analysis through using SPSS software 26.0 version. **Results:** This study results revealed that among the participants 77.6% subjects were man and 22.3% were women. That means the major portion of Spinal cord injury victims in South-east Asia is man. In this study there was 30% impairment, 32.2% had disability and 31.2% was handicapped. The maximum number of participants felt ‘physical health interferes in the normal work’, ‘limitations in bathing or dressing independently’, ‘accomplish less work than the participants want’, as well as decline in energy and feeling tired most of the time. **Conclusion:** Spinal cord injury is a disastrous condition which causes individual’s life declining. It is necessary to take steps to improve the physical and emotional status of persons with spinal cord injury.

## **1. Introduction**

Bangladesh is a poor densely populated country in south Asia, tried to achieving health related Millennium Development Goals (MDG) (Arafat, 2017). The growth rate of population in Bangladesh was 1.59% per year which includes 27% in urban area and 73% in rural. The literacy rate of people in Bangladesh is about 61.0% among the age of 15 years and above (Masud et al., 2017). Bangladesh has many health related problems among them Spinal cord injury (SCI) is one of the most devastating and debilitating critical condition. Spinal cord injury (SCI) is a major public health problem for the society that causes non-progressive motor loss, sensory impairment and autonomic dysfunction for the person

with Spinal cord injury (SCI) (Noreau et al., 2000). Spinal cord injury (SCI) is the damage to the spinal cord that causes changes in its function, either temporary or permanent. These changes also cause loss of muscle function, sensation, autonomic function, limitations to perform Activities of Daily Living (ADLs) below the level of the lesion (Clin Rehabil, 2011).

Disability is known to be associated with older age and female gender, and is likely to be related to socio-demographic measures such as social class, income, and social support (Smith et al., 2013). Some of these variables have in turn been reported to be associated with depression in older subjects. In recent decades the average life expectancy of the people with spinal cord injury has increased (Jensen et al., 2013). Spinal cord injury (SCI) is unexpected which alters dramatically the course of an individual's life; It causes sudden, often devastating damage to the central nervous system, with potential adverse effects in multiple body systems including musculoskeletal, integumentary, digestive, urinary, cardiovascular, reproductive where many of the secondary complications experienced by individuals with SCI are quite unlike those experienced by persons with general health issues or other neurological disorders (Tulsky et al., 2015). The London Handicap Scale was much more closely related to hand grip strength and peak expiratory flow rate, than to income, social class or social engagement variables (Moghimian et al., 2015). Often, parents feel alone in the fight against the disease, they had lack of support of this system. To ensure proper care for their loved one, one parent usually resigns from work. Chronic disorders of movement and posture in children with CP will cause a decrease in functioning and inability to perform activities of daily living (Sauve et al., 2010). There are several factors that are associated with depressed mood those were social isolation, post-traumatic symptoms, withdrawal and feelings of guilt. Spinal Cord Injury is the most complex injury of all catastrophic injuries where patients usually have permanent and devastating neurologic deficits with disability and the injury causes negative effect on the injured person's functional, medical, psychological and economic well-being (Smith et al., 2013).

Spinal cord injury (SCI) is a devastating disorder that can cause impairment in physical, psychological, and social functioning (Gurcay et al., 2010; New et al., 2013; Smith et al., 2013). It is a frequent cause of mortality, and is reflected in radical changes in lifestyle and quality of life (QOL) for both the persons with SCI and their family members (Kawanishi & Greguol, 2013). Spinal cord injury can occur in everyone's life and the patient with Spinal cord injury faces lots of challenges in coping with the injury process as well as rehabilitation; Although some patients recover partial to perform the daily living activities through rehabilitation but many activities are permanently altered (Kumar & Gupta, 2016). As the spinal cord is responsible for conducting afferent and efferent stimuli between the periphery and the brain, when this organ is injured, organic structures and functions are compromised, resulting in limitations to perform Activities of Daily Living (ADLs). (França et al., 2011). Spinal cord injury (SCI) is one of the most serious injuries of the musculoskeletal system which most cases brings about permanent disability and the unexpected occurrence of the injury and experiencing a new life situation result in a decrease in the quality of life in individuals with SCI; SCI and its direct consequences entail dramatic changes in the functioning of a person, thus affecting virtually every dimension of life. Disorders of the respiratory, cardiovascular, digestive and urinary systems as well as sexual dysfunctions, spasticity, edema, pain, autonomic dysreflexia, dysfunctions of the endocrine system or disorders of biochemical processes are some of the many severe consequences and complications regarding particular body organs and systems (Pokaczajło et al., 2016). In a developing country like Bangladesh, life expectancy of spinal cord injured persons is much lower than in a

developed country (Razzak et al., 2011). SCI continues to be a major cause of disability throughout Asia as well as in Bangladesh (Islam et al., 2011). Both paraplegia and tetraplegia patient with spinal cord injury lead a poor health related quality of life where the Physiological problems as well as Psychological problems hamper the normal activities of daily living and overall Quality of life and delays the phase of rehabilitation (Robertovich et al., 2017).

Spinal cord injury also triggers altered urinary and fecal elimination, resulting from the loss of urinary and anal sphincter control and the consequent changes in the pattern of these eliminations, as well as alterations deriving from clinical complications like urinary infections, calculus and hydronephrosis (Gurcay et al., 2010). These problems not only alter human beings' physical and psychological conditions, but also hamper victims' sexual and reproductive capacity (Tulsky et al., 2015). In our country there is one government hospital whom they care about rehabilitation of Spinal cord injury (SCI) and one specialized non-government non profitable organization for the treatment and rehabilitation of Spinal cord injury (SCI) patients named Centre for the Rehabilitation of the Paralyzed (CRP) (Annual report of CRP, 2013-14). We must keep in mind that most of the difficulties are mainly due to financial problems rather than inadequate preparation to care for the person or lack of understanding of the disease. Cerebral palsy (CP) is a syndrome that encompasses a large group of childhood movement and posture disorders. It also involves motor impairment and associated impairments such as those of communication, intellectual ability, and epilepsy. Its severity and patterns of damage spread vary widely (Colver et al., 2014). During a baby's development in the womb, cerebral palsy results from brain injury and this is called congenital cerebral palsy. Although it is present from birth it may not be detected for months and 70% of children of cerebral palsy were responsible for about birth defect (WebMD, 2013). Therefore, in planning rehabilitation program for those patients, and also for care giver should be evaluated in detail. It is considered that mothers, undertaking the most significant role in the rehabilitation and caring for the child, should be treated the CP children in a better way. Additionally, mothers should be encouraged to take part in social activities related to their interests, and those with depressive symptoms should be supported psychologically. A systematic review, published in 2008, examined the prevalence of CP only in relation to gestational age and demonstrated a significant decrease in the prevalence of CP with increasing gestational age (Himpens et al., 2008). Cerebral palsy is a group of symptoms associated with etiologically varied central nervous system damage. Children with CP may also experience a wide range of social and emotional problems, such as rejection by friends, depression, frustration, anxiety, and anger.

**Study Objective:** To determine the prevalence of impairment, disability and handicap among personnel attending CRP, BAU, Mymensingh.

**Specific Objectives:** To find out the socio-demographic characteristics of personnel, determine the disease pattern; estimate the prevalence of impairment, disability and handicap among the respondents.

**Main outcome variable:** Disease Pattern, Impairment, Disability, Handicap.

## 2 Literature Review

A spinal cord injury (SCI) is typically defined as damage or trauma to the spinal cord that results in a loss or impairment of function resulting in reduced mobility or feeling. It occurs due to an acute traumatic lesion of neural elements in the spinal canal (spinal cord and cauda equina), which resulting in temporary or permanent sensory and/or motor deficit. Clinically spinal cord injury is known as the excludation of intervertebral disc disease, vertebral injuries without spinal cord injury, nerve root

avulsions and injuries to nerve roots and peripheral nerves outside the spinal canal, cancer, spinal cord vascular disease, and other non-traumatic spinal cord diseases. (National spinal cord injury statistical center, 2011). In low-income and middle-income countries, people with spinal cord injury (SCI) are vulnerable to life-threatening complications after they are discharged from hospital. According to Wyndaele and Wyndaele (2007), worldwide prevalence has been estimated to range between 223 and 755 per million people and because of improved survival rates, SCI prevalence is increasing. On the basis of a national data base of 30,822 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 (Saadat et al., 2010). According to NSCISC (2013), it is estimated that the annual incidence of SCI, not including those who die at the scene of the accident, is approximately 40 cases per million population in the US or approximately 12,000 new cases each year. The prevalence SCI according to NSCISC (2013) in the United States who are alive with SCI has been estimated to be approximately 273,000 persons, with a range of 238,000 to 332,000 persons. In United States the annual incidence of traumatic SCI is 40 cases per million or 1200 new cases each year (Rabadi et al., 2013). Nwankwo and Uche (2013) found that in SCI, The 31–45 years age group is the most frequently affected and male is more affected than female (4.3:1), 53% injury occurred in cervical spine, 22% thoracic spine and 25% lumbar spine injury. In Bangladesh the mean life expectancy of the people with SCI was found in a study 5.36 years. Overall, 56.4% of persons admitted with SCI died within 5 years and 43.6% survived 5 years or more after injury. A study shows in Bangladesh at CRP, the most vulnerable age groups were 20-40 years, covering 55.6% of persons. Frequency of SCI was less in those below 20 and above 50 years of age. In the 158 persons, 86.1% had injuries of traumatic and 13.9% of non-traumatic origin, leading to 79.75% with paraplegia and only 20.25% with tetraplegia (Razzak et al., 2011). In Bangladesh, 63% of SCI is caused by falling from a height (Hoque et al., 2012). Another common cause (18%), in Bangladesh Falling while carrying a heavy load on the head, usually resulting in tetraplegia (Razzak et al., 2011). Paralysis of certain areas of the body, along with the corresponding loss of sensation is the result of lesion in the spinal cord. (Disabled world, 2007). Spinal cord injury is mainly the damage to the spinal cord which may result from direct injury to the cord itself or indirectly from damage to surrounding bones, tissues, or blood vessels (Zieve and Hoch, 2010). ASIA impairment scale: A = Complete: No motor or sensory function is preserved in the sacral segments S4-S5. B = Incomplete: Sensory but not motor function is preserved bellow the neurological level and includes the sacral segments S4-S5. C = Incomplete: Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a muscle grade less than 3. D = Incomplete: Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a muscle grade of 3 or more. E = Normal: motor and sensory function are normal (American spinal cord injury association, 2011). There are mainly two types of lesions associated with a spinal cord injury (SCI). Spinal cord injury (SCI) can be complete or incomplete (Crepeau, 2003). A complete type of injury means the spinal cord is damaged completely & in a "complete" spinal injury, all functions below the injured area are lost (National Institute of Neurological Disorders and Stroke, eds. 2013). Whereas an incomplete injury means only part of the spinal cord is damaged. A person with an incomplete injury may have sensation below their lesion but no movement. An "incomplete" spinal cord injury involves preservation of motor or sensory function below the level of injury in the spinal cord. To be classed as incomplete, there must be some preservation of sensation or motion in the areas innervated by S4 to S5 (Wuermser et al., 2007).

Tetraplegia, also known as quadriplegia, is paralysis caused by illness or injury of spinal cord that results in the partial or total loss of use of all four limbs. It refers to impairment or loss of motor and /or sensory function of the upper limb & lower limb of the body which is supplied by the cervical segments of the spinal cord due to damage or neural elements within the spinal canal (Kirshblum et al., 2011). The worldwide incidence and prevalence of SCI are increasing progressively. Chen et al. (2013) formulate a global mapping of spinal cord injury epidemiology, he found that the range of reported global prevalence is between 236 and 1009 per million. Asian countries particularly China and India are not appropriately represented, with available Asian statistics likely underestimating the overall prevalence within this populous region. Prevalence data is only exists for the Kashmir region in India with a prevalence of between 236-464 per million traumatic SCI. In Western Europe: Two countries only have reported prevalence data - Finland 280 per million and Iceland 316 per million. In North America: USA 721-1009 per million. Canadian data is estimated at approximately 1173 per million (assuming a population of 30.7 million). The most representative incidence statistic for each country within WHO regions is presented along with etiology data where possible. Asia Pacific: Japan on the basis of a native wide survey, had an incident rate of 40.2 per million and had higher rates of tetraplegia than experienced in other countries. A higher than usual proportion of falls (42%) is probably related to an aged population at the time of injury, given Japan has an extremely aged population with 29.7% of people being aged 60 years or over , based on 2009 statistics . Asia, East: Taiwan had an incident rate of 18.8 per million (70% of possible SCI cases from centers through Taiwan ). Land Transport accounted for 49 % of SCI in the general population.

The incidence of SCI was higher in Geriatric (age greater than 65) population (47.5 per million) with a higher proportion of tetraplegic patients in this group. Asia, South: Land Transport- related SCI is reported to be much lower than European countries; falls predominate within southern Asia. The highest percentage of falls was in Pakistan 82%, particularly fall from tress and roof tops. Data from Bangladesh also had high number of falls (63%), out of which 43% due to fall from trees and 20% while carrying heavy loads. There is a statistics for people in Nepal under the age of 19, in which 61% of SCI was due to falls mainly from rooftops as opposed to trees in the rest of the region (Geyh et al., 2010). There are 31 pairs of spinal nerve in human body. They are 8 cervical, 12 thoracic, 5 lumber, 5 sacral and 8 coccygeal pairs of spinal nerve. Every spinal nerve consists of a dorsal and a ventral root that arise from a single spinal cord segment. C1 spinal nerves exit the spinal column between the foramen magnum and the C1 vertebra; C2 nerves exit between the posterior arch of the C1 vertebra and the lamina of C2; C3–C8 spinal nerves pass through the intervertebral foramen (IVF) above their corresponding cervical vertebrae, with the exception of the C8 pair which exit between the C7 and T1 vertebrae (Somers, 2002). Traumatic SCI results from motor vehicle collisions (36.5%), falls (28.5%), violence (14.3%) and sports (9.2%) activities being leading causes. Since (2010), motor vehicle crashes account for 36.5% of reported SCI cases. In a study of Razzak (2011), found that the rate of depression after SCI in Bangladesh because of traumati injury is 16.9% at CRP. Particularly for rehabilitation of people with traumatic SCI, have been concerned not only with degree of loss of function, but also with quality of life (Geyh et al., 2010). A spinal cord injury (SCI) results in a number of motor, sensory, and autonomic impairments. It predisposes individuals to multisystem dysfunction, leading to an increased likelihood of a range of related secondary complications (Tonack et al., 2008), defined as medical consequences that can cause functional limitations. Common secondary health complications after SCI include pressure ulcers, urinary tract infections, bowel problems, fractures, chronic pain, and depressive disorders (New

et al., 2013). Despite the fact that many of these complications are amenable to treatment and/or prevention, secondary complications represent a significant burden at both the health system and individual level (Dorsett et al., 2008). As a result of secondary complications, individuals with a SCI have greater rates of contact with the health care system than the general population, and also have multiple hospitalizations throughout their lifetime. Dorsett and Geraghty (2008) found that compared with a control group, individuals with a SCI required 30 more hours of home-care services, were 2.7 times more likely to have physician contact, spent 3.3 more days in hospital, and were hospitalized 2.6 times more often. Hospitalization following SCI has been studied in a number of countries including the United States (US), Britain, Australia, the Netherlands (Hamell, 2007), Italy (Rabadi et al., 2013), and Turkey (Jaglal et al., 2009). Interestingly a study conducted by Tonack et al., (2008) found that there was no significant correlation between life satisfaction and extent of paralysis. However, life satisfaction appeared to be associated with issues of social integration, mobility and locus of control. The large number of falls in Bangladesh is a result of food harvesting which is an important part of our largely agricultural economy. Among the spinal cord injuries caused by road traffic accidents, mostly involve passengers of 'three wheel vehicles' like baby, taxis and rickshaws. There are a limited number of studies in the literature evaluating musculoskeletal system pain and the related factors that are observed in the mothers of the children with cerebral palsy (Kaya et al., 2010). Depression and chronic stress might cause physical symptoms related to stress in these mothers. The prolonged stress and depression might affect immunological functions by causing dysfunction and excessive stimulation in the neuro endocrinological stress response system (TeRzi and Tan, 2016). Individuals with traumatic SCI in Ontario. Secondary complications, including musculoskeletal, respiratory, gastrointestinal, and urological disorders, were the main reasons for readmission (Jaglal et al., 2009). A large number of visits to family physicians and physiatrists have also been reported. We concluded that the high rate of physician and special is utilization, emergency department visits, and hospital readmissions, indicate that current care practices are not managing or preventing secondary complications adequately. We suggested that future research is required on strategies that can be implemented to improve the long term quality of care for individuals with traumatic SCI (Jaglal et al., 2009). People with a SCI tend to report fewer feelings of well-being, on average, than non-disabled persons; score lower on physical, mental, and social health, and in other domains of life that people consider important to life quality (Rabadi et al., 2013). Thus, quality of life and well-being, and their determinants, have become important outcomes in SCI research and have been widely assessed (Hill et al., 2010).

### 3. Materials and Methods

**Study Design:** This was a Cross sectional descriptive type of observational study. **Study Area:** The study was conducted in Physiotherapy Department at Centre for the Rehabilitation of the Paralysed (CRP), Bangladesh Agricultural University, Mymensingh. **Sample Size:** Sampling procedure for cross sectional descriptive type of study done by following equation

$$n = \left\{ \frac{z - \frac{a}{2}}{d} \right\}^2 \times pq$$

Here, d = Acceptable margin of error or precision (5%) = 0.05 According to formula, Sample size,  $n = (1.96)^2 \times (0.7 \times 0.3) / (0.05)^2 = 322.56$ ; in this study, 322 Patients participated as sample. **Inclusion Criteria** Patients aged 10-45 years and both sex was attending, Centre for the Rehabilitation of the Paralysed, Bangladesh Agricultural University, Mymensingh. **Exclusion Criteria** Patient who had

cognitive problem, Patient who had left the hospital after completing treatment, Patient whose were not interested to participate in the study. **Data collection Instruments and Methods** A questionnaire about Disability measurement scale and also used some questionnaire about impairment and handicap, socio-economic informative questionnaire was used for data collection. Face to face interview technique was used for collecting data. Before the interviewing, purpose of the study was explained very clearly to the respondents. Respondent’s interview was taken one by one in an isolated place. **Data Analysis** Data was analyzed using statistical package for social science (SPSS), Version 26.0

#### 4. RESULTS

##### Socio-demographic variable

Out of 322 participant’s 100 participant’s age range was (10-20) years, 100 participant’s age range was (21-30) years, 100 participant’s age range was (31-40) years, and 22 participant’s age range was (41-45) years. Mean age:  $26.22 \pm 9.24$  years .Out of 322 participants, the majority 250 (77.64%) were male and 72 (22.36%) were female. Out of the 322 participant’s 250 (77.64%) income range was (10000-20000), 60 (18.63%) income range was (20000-30000), 12 (3.73%) income range was >30000.

**Level of Impairment related difficulties** here shows the different level of impairment

**Table-I: Level of Impairment related difficulties (n=322)**

Impairment	Difficulties			
	No difficulty n (%)	some difficulty n (%)	A lot of difficulty n (%)	Cannot do at all n (%)
Difficulty seeing, even if wearing glasses	310 (96.27)	10 (3.11)	2 (0.62)	0
Difficulty hearing, even if using a hearing aid	290 (90.06)	30 (9.32)	2 (0.62)	0
Difficulty Walking or climbing steps	200 (62.11)	80 (24.84)	30 (9.32)	12 (3.73)
Difficulty Remembering or concentrating	150 (46.58)	100 (31.05)	50 (15.52)	22 (6.83)
Difficulty (with self –care such as) washing all over or dressing	100 (31.05)	150 (46.58)	22 (6.83)	50 (15.52)
Using your usual (Customary) language, communicating, for example understanding or being understood	200 (62.11)	10 (3.11)	40 (12.42)	2 (0.62)

Level of Disability related difficulties here shows the different level of Disability

**Table-II: Level of disability related difficulties (n=322)**

Disability	difficulties				
	None n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	Extreme n (%)
Understanding and communicating	15 (4.66)	20 (6.21)	100 (31.05)	92 (28.57)	45 (13.58)
Getting around	3 (0.92)	2 (0.62)	17 (5.28)	250 (77.64)	50 (15.52)
Self-care	50 (15.52)	50 (15.52)	100 (31.05)	100 (31.05)	22 (6.83)
Getting along with people	100 (31.05)	100 (31.05)	100 (31.05)	22 (6.83)	100 (31.05)
Life activities	32 (9.94)	70 (21.74)	100 (31.05)	70 (21.74)	50 (15.52)
Participation in society	50 (15.52)	70 (21.74)	70 (21.74)	100 (31.05)	32 (9.94)

Level of Handicap related difficulties here shows the different level of impairment

**Table-III: Level of Handicap related difficulties (n=322)**

Handicap	Difficulties				
	Not at all n (%)	Slightly n (%)	Moderate n (%)	Quit a little bite n (%)	Extremely n (%)
Time extent of physical or emotional problems interfere social activities (like visiting friends, relative neighbors etc.)	80 (24.84)	200(62.11)	32 (9.94)	10 (3.11)	0
Time extent of physical health or emotional problem interfered with normal social activities with family, friends, neighbors or groups	32 (9.94)	60 (18.63)	80 (24.84)	50 (15.52)	100 (31.05)
The past 4 week time of bodily pain	12 (3.73)	80 (24.84)	200 (62.11)	35 (10.87)	5 (1.55)
Pain interfering amount of your normal work (including both work outside the home and housework)	50 (15.52)	22 (6.83)	100(31.05)	50 (15.52)	100 (31.05)
Difficulty performing					



the work or other activities(for example, it took extra time)	200 (62.11)	50 (15.52)	30 (9.32)	2 (0.62)	22 (6.83)
Any of the following problems with work or other regular daily activities as a result of any emotional problems(such as feeling depression or anxious)	250 (77.64)	30 (9.32)	30 (9.32)	12 (3.73)	0

**DISCUSSION**

In this study maximum age range was 10-30 and minimum age range was 41-45. Some studies showed that there may be a greater chance of pregnancy complications of the babies of older women than babies of younger women. Nabors conducted a research on “Maternal age and parity in relation to Cerebral palsy in their infants” showed that the patient who was more than 35 years old is more likely to produce a child with cerebral palsy than younger women (Brown et al., 2008). So from this study it also clear that CP can developed from the middle age of the mothers. So from the study it was clear that age group of the patients were almost similar. This study results found that among the participants 77.64% subjects were man and 22.36% were women. Other study conducted in Malaysia (Ramakrishnan, 2011) found that men were 83.30% and in India (Gupta, 2011) it was 84%. It indicates that the major portion of Spinal Cord Injury victims in south-east Asia is man. So from the study it was clear that men were most commonly affected by spinal cord injury. In this study 69.56% living in rural area and 30.43% living in urban area. The union between two people genetically related by descent from a common ancestor is called consanguineous marriage. Any marriage between relatives less close than siblings (brothers and sisters) or parents and offspring are not necessarily outlawed, but the dividing line between legal and illegal is vague and varies between countries. Consanguineous marriage is still high in Egypt (35.30%), especially among first cousins (86%). However the frequency varies by region. Also it was higher in rural areas (59.90%) than in semi-urban and urban areas (23.50% & 17.70% respectively). On the other hand first cousin marriage is also risk for developing cerebral palsy, include birth after fewer than 32 weeks gestation, birth weight of less than 5 lb with intrauterine growth retardation, intracranial hemorrhage and trauma and about 10 to 20% patients (Chen et al., 2013).

In this study 77.64% income range was (10000-20000), 18.63% income range was (20000-30000), 3.73% income range was >30000. A cross-sectional study conducted in Malayasia found that 47.40% participants with no income (un-employed) and (52.60%) persons who were working at the time of this study (Ramakrishnan, 2011). From comparing two study it was clear that in abroad maximum people were self-employed.

In this study found that, among all the participants there 31.05% were farmer, 29.05% Businessman, 12.42% were Students and Day laborer, 8.38% service-holder, and 6.21% homemaker, And After having the injury they are jobless or work other sector that is easier for them. Physical or medical barrier of work place was one of the main causes of unemployment. 46 percent faced barrier due to severity of injury, 28% medical barrier & 12% due to difficulty to obtain appropriate work. Individuals with SCI

often face many barriers to community integration and activity participation including issues of accessibility, pain, lack of information, and psychological barriers (Gupta, 2011).

Bangladesh Literacy Survey (BLS) report, 2010 shows that 57.53% population of Bangladesh is literate and that they can read and write. In this study finding suggest that among all the participants 62.11% were no formal education, 9.32% completed Secondary, 12.42% completed higher secondary, 10.87% completed Graduation and 5.28% completed Post graduation degree. The findings of this study were very similar to the findings of those studies.

In this study measure impairment within six question and the percentage of those questions was seeing difficulty 3.72%, dressing difficulty 9.92%, walking or climbing difficulty 37.89%, remembering difficulty 53.40%, washing difficulty 68.92%, language or communicating difficulty was 16.12%. And on the other hand the prevalence varied from 0.1% to 92%: they were under 2% for children aged below 15 years and ranged from 0.1% to 34% among young adults and from 10% to 92% among adults aged over 40. (Barbotte et al., 2001; Tomasone et al., (2013). From this study it was clear that the findings of this study were very similar to the findings of those studies.

In this study measure disability within six portion of question and the percentage of those questions mentioned that was understanding and communicating 79.78%, difficulty getting around 99.04%, self-care 84.42%, getting along with people 99.95%, life activities 89.97%, participation on society 84.35%. Another study there prevalences varied between 3.6% and 66%. Functional limitation indicators showed rates around 10%; the rates pertaining to general indicators ranged between 12% and 58%. Prevalences for country studies were no different from those shown by regional studies (Tomasone et al., 2013); Jadid, Al M S (2013). From this study it was clear that the findings of this study were very similar to the findings of those studies.

In this study measure handicap within six question and the percentage of those questions mentioned that was physical or emotional problems interfere social activities (like visiting friends, relative neighbors etc.) 75.01%, physical health or emotional problem interfered with normal social activities with family, friends, neighbors or groups 90.10% , had bodily pain during the past 4 week 99.99%, pain interferes normal work (including both work outside the home and housework 84.42%, difficulty performing the work or other activities (for example, it took extra time) 37.84%, had any of the following problems with work or other regular daily activities as a result of any emotional problems (such as feeling depression or anxious) 22.37%. One study in the United Kingdom, showed high prevalences (30–40%), whereas the French surveys revealed rates of the order of 10%. In another study the association between handicap and depression was robust, the only confounding effect being negative; adjusting for age increased the effect size (Gurcay et al., 2010; New et al., 2013; Smith et al., 2013).

Associations with social support, advanced age and income were abolished after adjustment for handicap level. These finding needs to be interpreted cautiously (Kumar & Gupta, 2016). It may be that handicap is simply an effective summary measure of all those components of social disadvantage, like social isolation, poverty and extreme age, which may mediate the association between poor health and depression (Jensen et al., 2013). Alternatively, these factors may be related to handicap but otherwise irrelevant to depression in this age group. The argument hinges on whether these socio-demographic factors are core contributors to handicap, or distinct but related variables (Tulsky et al., 2015). Although the relationship between age and handicap is particularly strong, chronological age is more likely to fall into the latter category (Razzak et al., 2011). Social support and social network however, through their impact on dependency, mobility and social integration, and poverty through its impact on economic self-

sufficiency and occupation, could be considered to be closer to the core of the handicap measure (Islam et al., 2011). However, handicap is much more than a summary measure of social disadvantage, and is influenced mainly by basic measures of physical functioning (Munce et al., 2013). However the maximum number of participants felt ‘physical health interferes in the normal work’, ‘limitations in bathing or dressing independently’, ‘accomplish less work than the participants want’, as well as decline in energy and feeling tired most of the time. Hence, it was found that there was a reduced level of physical functioning in SCI clients. The same results were noted in a study in Australia which reported that the limitation was more in physical functioning (Kreuter et al., 2005).

## CONCLUSION

This study results revealed the socio-demographic feature, current situation of spinal cord injury in Bangladesh. It concluded that males (77.64%) become more vulnerable to spinal cord injury and faces impairment, disability and handicap than females (22.36%). Among the study population approximately 30-33% patients suffering from impairment, disability and handicap. Suffering from impairment, disability and handicap should be addressed and adequate support should be ensured. Further study with large sample size may be conducted to find out the causes and way to prevent and control impairment, disability and handicap.

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