

Demography, Diagnosis and Complications of Spinal Cord Injury Patients in a Rehabilitation Center of Bangladesh

Mohammad Morshedul Quadir¹, Krishno Sen¹, Mst. Rebeka Sultana², Md. Shahoriar Ahmed¹, Farjana Taoheed¹, Amin Andalib^{3*}, Russell Kabir⁴, AM Fariduzzaman⁵ and SM Yasir Arafat⁶

¹Centre for the Rehabilitation of the Paralysed (CRP), Dhaka, Bangladesh

²New Deep Clinic and Diagnostic Centre, Dhaka, Bangladesh

³Department of Surgery, Dhaka Medical College, Dhaka, Bangladesh

⁴Anglia Ruskin University, Chelmsford, UK

⁵Department of Psychiatry, Bangabandhu Sheikh Mujib Medical University, Bangladesh

⁶Department of Public Health, ASA University Bangladesh

Abstract

Background: Spinal cord injury and its health related complications pose a major impact on the overall morbidity and mortality as well as cause economic constrains. It was aimed at looking into the demographic distribution, diagnosis, as well as complications in patients with spinal cord injury.

Methods: The study was conducted at Centre for the Rehabilitation of the Paralysed (CRP) between 2012 and 2013 from 201 respondents with the help of a structured preformed pretested questionnaire by face to face interview.

Results: Out of 201 respondents 176 (87.6%) were male and 25 (12.4%) were female; majority of the patients were in their 3rd decade which consisted 28.6%, followed by 27.4% in between 21-30 years and 26.8% in between 41-50. Most of the respondents of this study had traumatic paraplegia (56.5%) and Buttock was found to be the predominant site for developing site pressure sore as evident form 67.5%.

Conclusion: Productive males are more prone to spinal cord injury and the most common diagnosis is paraplegia with the most risky area is buttock for developing pressure sore. The findings may add in the way of developing awareness among stakeholders regarding demography, diagnosis and the pattern of the complications in a country like Bangladesh.

Keywords: Bed sore; Spinal cord injury; Rehabilitation center; Complications; Bangladesh

Introduction

Spinal cord injury, is certainly a debilitating and devastating condition in terms of its effect on a person's physical, mental, familial as well as social life [1]. Due to its profound impact on a person's overall quality of life and increasingly high incidence, injury to spinal cord due to any pathology is now considered as a morbid condition as well as a threat to both personal and national economy [2,3]. Spinal cord injury itself is a crippling condition, at the same time may lead to a variety of complications which can affect the life of the patient as it increases the treatment cost significantly and accelerate the disease process which link to early mortality [1,3,4]. The incidence of Spinal cord injury is increasing throughout the world with an annual incidence rate of 15 to 40 per million with a male predominance, more prevalence in low socio-economic society and the causes ranges from traumatic in most of the case like motor vehicle accident to gunshot injury and physical violence, however non traumatic causes like Tuberculosis (TB) of the spine is also responsible for this [3-6]. A great variety of complications usually follow injury to spinal cord such as pressure sore, urinary complications, most of which are preventable nonetheless these associated complications are the most common cause of re-hospitalization following spinal cord injury and eventually lead to a great deal of disability, morbidity, degree of dependence and mortality [1-4].

Spinal cord injury is a severe condition of the musculoskeletal system, more often leading to permanent disability and on the top of that brings about drastic changes the functioning ability of the patient and eventually encompassing each and every aspect of life [5-8]. Complications may associate virtually all systems of the body namely cardio-respiratory system, genitourinary system, local disorders like pressure sore or full blown biochemical disorders. Such domino effect following the injury to spinal cord significantly decreases the quality of life of the individual and happens on the early or acute stage when initial rehabilitation process are being initiated [6]. Spinal cord injury whether traumatic or form other cause and

its associated chronic disabilities and deterioration of the quality of life may be generalized by more substantial data on the demographic distribution of the condition, association of complications with sex, employment, social status and overall condition of the individual [4-6,9-11].

Bangladesh a poor developing country with a literacy rate of about 61.0% among the age of 15 years and above [12,13] spinal cord injury and its health related complications are a major issue as it causes a great deal of morbidity and mortality as well as economic problems [14]. The researcher aimed to looking into the trend in demographic distribution of spinal cord injury, diagnosis, as well as complications in patients with spinal cord injury which will help to identify the specific population group at risk and take preventive measure to prevent the associated complications [15-17].

Methods

Study place

Centre for the Rehabilitation of the Paralysed (CRP) one of the largest rehabilitation centre for different injury in Bangladesh. It receives referrals from other hospitals and all over the Bangladesh. Here patients admitted with or without pressure ulcer. Some pressure ulcers are cure by conservative treatment and some are needs surgery

*Corresponding author: Amin Andalib, Department of Surgery, Dhaka Medical College, Dhaka, Bangladesh, Tel: +8801713068868; E-mail: aminandalib20@gmail.com

Received January 31, 2017; Accepted February 07, 2017; Published February 14, 2017

Citation: Quadir MM, Sen K, Sultana MR, Ahmed MS, Taoheed F, et al. (2017) Demography, Diagnosis and Complications of Spinal Cord Injury Patients in a Rehabilitation Center of Bangladesh. Int J Neurorehabilitation 4: 244. doi: 10.4172/2376-0281.1000244

Copyright: © 2017 Quadir MM, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

when it became uncontrolled. In CRP given extensive education and counseling about pressure ulcer care not only pressure care but also all aspects about how they can pass their life with Spinal Cord Injury (SCI). The rehabilitation procedure going through 3 months long or sometimes more according to patient's physical condition and recovery time. After patients discharge from CRP, health care professionals will follow-up the patients in Community by doing patients home visit.

Data collection, management and analysis

Data were collected between 2012 and 2013 from the community during the home visit of previously admitted patients at CRP with spinal cord injury. A structured preformed pretested questionnaire was used to collect the data from 201 patients by face to face interview. After collection data were managed properly and was analyzed in SPSS 16 version and Microsoft Excel Software 2007 version.

Ethical consideration

The researchers were properly concerned about the ethical issues

Demographic Variables			
Gender	Gender	Frequency	Percent
	Male	176	87.6
	Female	25	12.4
Age	Age	Frequency	Percent
	11 to 20	8	4.8
	21 to 30	46	27.4
	31 to 40	48	28.6
	41 to 50	45	26.8
	51 to 60	12	7.1
	61 to 70	7	4.2
Income	Income (BDT)	Frequency	Percent
	0 to 5000	101	70.1
	5000 to 10000	30	20.8
	10000 to 15000	6	4.2
	15000 to 20000	6	4.2
	20000 to 25000	0	0
	25000 to 30000	0	0
	30000 to 35000	0	0
	35000 to 40000	1	0.7
Employment Status	Employment Status	Frequency	Percent
	Yes	93	47
	No	103	53

Table 1: Distribution of demographic variables among the respondents (n=201).

relate to the study. Formal ethical clearance was taken from the ethical review committee of the CRP for conducting this study. As the patients were discharge from CRP they all are willing to give all information to the CRP health care professionals. Confidentiality of the persons and the information was maintained and observed and unauthorized persons did not have any access to the collected data.

Results

Among 201 respondents 176 were male (87.6%) and 25 were female (12.4%). Most of the patients were in their 3rd decade which consisted 28.6%, followed by 27.4% in between 21-30 years and 26.8% in between 41-50. 93 of the respondent (47%) were employed and 103 were unemployed (53%) and 70.1% population had income below 5000 BDT and 20.8% had between 5000 to 10000 BDT (Table 1).

Out of 201 respondents, 168 diagnoses was available and among them 56.5% (95) had the diagnosis of traumatic paraplegia and 29.2% had traumatic tetraplegia whereas Non-traumatic paraplegia, Guillain-Barre Syndrome and TB spine were the other diagnosis having the distribution of 9.5%, 4.2% and 0.6%, respectively (Figure 1).

22.7% (45) of the respondents had pressure sore present and most of these sore were located over buttock which had 67.5% followed by Ischial Tuberosity having 7.5% of the sore (Table 2). 16.9% respondents had complained of having burning sensation during urination and 10.8% was found to have urinary incontinence. 17.8% population

Presence of Pressure sore, their location and type of treatment			
Presence of Pressure sore	Pressure sore Present	Frequency	Percent
	Yes	45	22.7
	No	153	77.3
Location of Sore	Location of sore	Frequency	Percent
	Buttock	27	67.5
	Ischial Tuberosity	3	7.5
	Others	10	25
Type of Treatment	Treatment Type	Frequency	Percent
	Medicine	9	4.5
	Hospital	2	1
	Kobiraz	1	0.5
	Village Doctor	4	2
	No Treatment	4	2
	Self-Management	3	1.5
	Dressing	12	1.5
	CRP's Advice	3	1.5

Table 2: Distribution and location pressure sore among the respondents (n=201).

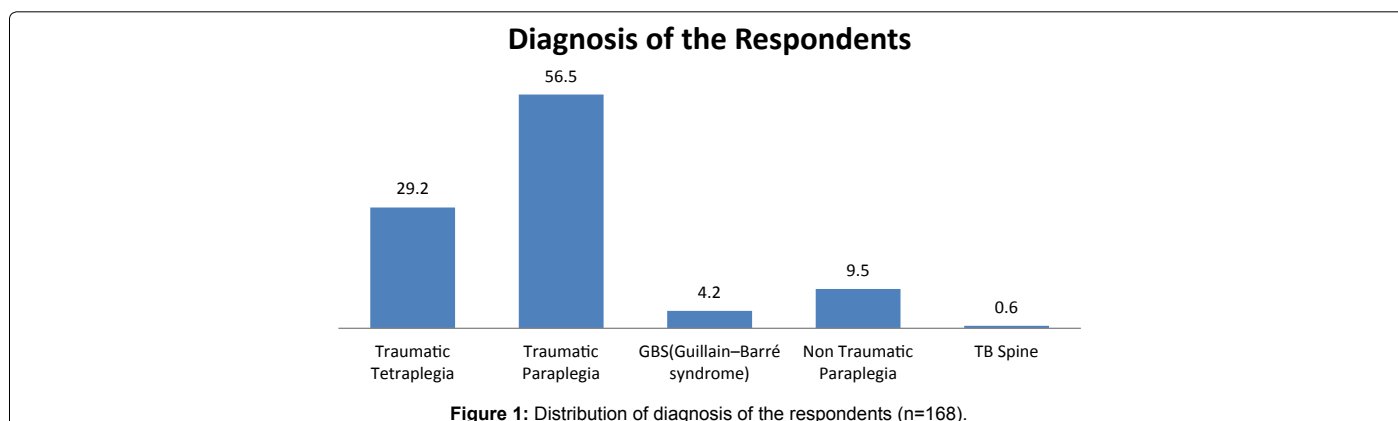


Figure 1: Distribution of diagnosis of the respondents (n=168).

Urinary Complications and Received Managements			
Urinary Complications	Types of Complication	Frequency	Percent
	No problem	108	55.4
	Fistula	1	0.5
	Burning Sensation	33	16.9
	Pain	7	3.6
	Stone in Kidney	1	0.5
	Incontinence	21	10.8
	UTI	12	6.2
	Problem in catheterization	10	5.1
Others	2	1	
Types of Treatment for Urine Problem	Treatment	Frequency	Percent
	Medicine	18	17.8
	Hospital	18	17.8
	Kobiraz	4	4
	Village doctor	7	6.9
	Private clinic	3	3
	No treatment	23	22.8
	Self-Management	28	27.7
Types of Management	Management	Frequency	Percent
	Taping	1	0.7
	Permanent Catheter	15	9.9
	Plain Catheter	67	44.1
	Condom Catheter	3	2
	Norma Method	57	37.5
Others	7	4.6	

Table 3: Distribution of urinary complications and received managements.

received medical and same amount had the hospital management however 22.8% did not receive any treatment (Table 3).

Discussion

The study population was a selected group of people suffering from spinal cord injury that made it necessary to get admission in hospital. The Demographic variables author took into consideration were sex, age, employment status and income of the patient. Out of 201 study population 176 were male and 25 were female and this male predominance was also reported in the previous studies carried out both locally [14,18-20] and globally [4-11,21] (Table 1). In this study most of the patients were in their 3rd decade which consisted 28.6% , followed by 27.4% in between 21-30 years and 26.8% in between 41-50, which was also a common finding as reported by Hossain et al. [22] where mean age was 47.44 ± 13.30 [17]; Ulrich et al found it 36.1 and according to Lali et al. [21] mean age was 35.3, but in some studies the age of the study population was little bit different [4,14,16,18] (Table 1). It was found that 93 of the respondent (47%) were employed and 103 were unemployed (57%) which somewhat correlate with Zahangir et al, who reported 36% of the patient to be day laborer [18] and also Ulrich et al., according to whom only 22% of the patients were full time employed but does not go in line with Lali et al. and other articles [4,14,17,22] (Table 1). A general trend of development of pressure sore among people with low income was found in this study which was also common in the other reports [4,11,18,19]. Most of the respondents of this study had paraplegia (56.5%) and the principle cause was trauma which was similar to the report Rahman et al. but Guihan et al. reported most of their patients (73.3%) had complete spinal cord injury [10,14,20] but in all the reports the major cause of injury was reported to be trauma whether road traffic accident or fall from height or any other mechanism of traumatic injury [4,10,11,14,20,21]

(Figure 1). Regarding the location, the authors found Buttock to be the predominant site for developing site pressure sore as evident form 67.5% patient had sore over their buttock followed by Ischial tuberosity (7.5%) and this finding was similar to Hossain et al. and Ulrich et al. reported the lower back to the commonest site for pressure sore [17,22] (Table 3). In this article 44.6% of the respondents had urinary complication and 16.9% had dysuria and 10.8% had urinary incontinence which is almost similar to the report of Thiyagarajan et al. and Guihan et al. [16,20] (Table 3). 30 patients with pressure sore had other skin disease which may be supported by the report of Guihan and Bombardier, where 96.2% patient had associated skin disease, but Endocrine conditions like Diabetes had a significant association whit development of pressure sore along with vascular conditions which were not evident in the current study [20]. Moreover, other risk factors for developing pressure sore in patients with spinal cord injury like inability to turn the body independently or systemic conditions like anemia, jaundice, malnutrition as reported by many authors [4,9,10,16,22] where not evident in this particular study.

Conclusion

Spinal cord, injury regardless of the cause has grave consequences as it creates a great deal of physical, psychological as well as economic restraints. Adult male seems to be at more risk of spinal cord injury and paraplegia is the commonest diagnosis, usually associated with multidimensional complications such as pressure sore. Further large scale study would help to generalize the findings and to encourage the further involvement of the stake holders to prevent the onset of the devastating course.

Acknowledgement

Author acknowledges the Kauvery Research Group for necessary support.

References

- Recio AC, Felter CE, Schneider AC, McDonald JW (2012) High-voltage electrical stimulation for the management of stage III and IV pressure ulcers among adults with spinal cord injury: Demonstration of its utility for recalcitrant wounds below the level of injury. *J Spinal Cord Med* 35: 58-63.
- Regan MA, Teasell RW, Wolfe DL, Keast D, Mortenson WB, et al. (2009) A systematic review of therapeutic interventions for pressure ulcers after spinal cord injury. *Arch Phys Med Rehabil* 90: 213-231.
- Kisala PA, Tuisky DS, Choi SW, Kirshblum SC (2015) Development and psychometric characteristics of the SCI-QOL Pressure Ulcers scale and short form. *J Spinal Cord Med* 38: 303-314.
- Saunders LL, Krause JS, Acuna J (2012) Association of race, socioeconomic status and health care access with pressure ulcers after spinal cord injury. *Arch Phys Med Rehabil* 93: 972-977.
- Jain NB, Ayers GD, Peterson EN, Harris MB, Morse L, et al. (2015) Traumatic spinal cord injury in the United States, 1993-2012. *JAMA* 313: 2236-2243.
- Pokaczajlo J, Tasiemski T, Urbanski P (2016) Relationship between spinal cord injury-related knowledge and health-related quality of life in persons with spinal cord injury. *Adv Rehabil* 1: 30.
- Richards S, Waites K, Chen Y, Kogos S, Schmitt MM (2004) The epidemiology of secondary conditions following spinal cord injury. *Topics in Spinal Cord Injury Rehabil* 10: 15-29.
- Crenshaw RP, Vistnes LM (1989) A decade of pressure sore research: 1977-1987. *J Rehabil Res Dev* 26: 63-74.
- Saladin L, Krause J (2009) Pressure ulcer prevalence and barriers to treatment after spinal cord injury: Comparisons of four groups based on race-ethnicity. *Neurorehabilitation* 24: 57-66.
- Chen Y, Devivo MJ, Jackson AB (2005) Pressure ulcer prevalence in people with spinal cord injury: Age-period-duration effects. *Arch Phys Med Rehabil* 86: 1208-1213.

11. Saunders LL, Krause JS, Peters BA, Reed KS (2010) The relationship of pressure ulcers, race and socioeconomic conditions after spinal cord injury. *J Spinal Cord Med* 33: 387-395.
12. Arafat SMY (2016) Anti-ulcerants: The driving force of the pharma market of Bangladesh. *Int J Perceptions Pub Health* 1: 1-2.
13. Uddin MS, Ahmed SRM, Arafat SMY (2016) Does mind exist in physician's mind? A brief phone survey in Bangladesh. *Int J Neurorehabilitation* 3: 234.
14. Rahman ZM (2012) Demographic profile of spinal cord injury: A retrospective study. *Spinal Cord* 50: 745-754.
15. Arora M, Harvey LA, Hayes AJ, Chhabra HS, Glinsky JV, et al. (2015) Effectiveness and cost-effectiveness of telephone-based support versus usual care for treatment of pressure ulcers in people with spinal cord injury in low-income and middle-income countries: Study protocol for a 12 week randomised controlled trial. *BMJ Open* 5: e008369.
16. Thiyagarajan C, Silver JR (1984) Aetiology of pressure sores in patients with spinal cord injury. *Br Med J (Clin Res Ed)* 289: 1487-1490.
17. Hossain S, Khundkar S (2013) Bacteriological status of pressure sore-A study of 50 cases. *Bangladesh Journal of Plastic Surgery* 18: 3.
18. Zahangir CA, Barua S, Uddin MG, Khatun UHR, Biswas RSR (2015) Functional outcome in Paraplegic patients from spinal cord injury. *Chattagram Maa-O-Shishu Hospital Medical College Journal* 14: 52.
19. Amin RM, Haque MM, Saha PK, Zai SZE, Hossain SM, et al. (2014) Pattern and risk assessment of Bedsore in hospitalized patients. *Chattagram Maa-O-Shishu Hospital Medical College Journal* 30: 13.
20. Guihan M, Bombardier CH (2012) Potentially modifiable risk factors among veterans with spinal cord injury hospitalized for severe pressure ulcers: A descriptive study. *J Spinal Cord Med* 35: 240-250.
21. Lali HS, Fehlings MG (2001) Epidemiology, demographics and Pathophysiology of acute spinal cord injury. *Spine* 26: S2-S12.
22. Ullrich PM, Jensen MP, Loeser JD, Cardenas DD (2008) Pain intensity, pain interference and characteristics of spinal cord injury. *Spinal Cord* 46: 451-455.