

Assessment of Stress Level and Quality of Life in Spinal Cord Injury Patients

RIZWANA YASMIN¹, SAMINA KOUSAR², SAIMA SULTANA¹, NAZI NOOR³, JAUHAR AMIN¹, SALMA IFTIKHAR ABBASI⁴

¹Department of Nursing, PIMS Hospital, Islamabad -Pakistan

²Department of Nursing, UHS, Lahore- Pakistan

³Department of Nursing, Jinnah Hospital, Lahore -Pakistan

⁴Department of Nursing, Poly Clinic Hospital, Islamabad- Pakistan

Correspondence to Miss. Rizwana Yasmin, Email: pims50066248@gmail.com, Tel: +92-332-5439173

ABSTRACT

Background: Spinal cord injury (SCI) involves severe physical, social, and also psychological consequences, and cause severe disturbance in normal daily activities of a person.

Aim: To assess the stress level and quality of life (QOL) variation among spinal cord injured individuals.

Study design: Descriptive Cross sectional.

Methodology: Simple random sampling recruited 165 participants (15-75 years) both genders, from government and public hospitals of Lahore and Islamabad. Data was collected by using The "Perceived Stress Scale (PSS-14 item)" and "WHOQOL-BREF" (26-item). Data SPSS v.24 analyzed the data. Quantitative data was expressed in terms of frequency and percentages. Results were shown in tabular and graph forms.

Results: On PSS questionnaires 87.9% experience moderate stress, 12.1% experience severe stress. On WHOQOL-Bref the average score of physical health was 53.18, psychological health was 55.42, social relationship was 69.16 and the lowest most score among four domains was environmental health 52.73.

Practical Impact: This study provided information regarding the perceived level of stress and QOL in SCI patients that is the most ignorant portion of our society and recognized the importance of assessing variation of stress and QOL in these patients so health care team take appropriate decisions for the improvement of the health status of these client.

Conclusion: It was concluded that SCI patients had moderate stress level and face life threatening complication associated with this injury. Thus, both physical disability and psychological disturbance may adversely impact their stress level and quality of life.

Keywords: Stress, Quality of life, Spinal cord injury and Psychological Impact.

INTRODUCTION

Spinal cord injury (SCI) can be traumatic or non-traumatic¹. Global increase has been noticed, 15 to 40 per million². Furthermore, in 2019 researchers estimated that a total of 17,730 new SCI cases were reported yearly and at the moment between 249,000 and 363,000 people with SCI are present in the United States³.

The most common causes of traumatic spinal cord injury (T-SCI) around the world and as well in Pakistan are falls from height, road/traffic accidents, gunshot injuries or sport accidents⁴. Moreover, there are a number of medical conditions (degenerative disc disease, tumors) that are responsible for non-traumatic spinal cord injury (NT-SCI)⁵.

In Pakistan, due to increase in population and decrease in the working opportunities, people are undertaking risky work and exposing themselves to the risk of spinal cord injuries (SCIs), which can lead to a lifelong disability. These individuals may be vulnerable for developing a number of physical health problems such as pain, bed sores, respiratory and urinary tract infection, cardiovascular and gastroenterological problems. These secondary problems may require re-hospitalizations/rehabilitation and enhance the cost of healthcare treatments and create stress and have an impact on QOL. Along with these physical disabilities, patient's psychological, physiological and psychosocial functions get disturbed which can interfere their quality of life (QOL)⁶.

Psychological adjustment with SCI is much harder than physical and imposes notable stress on injured individuals as patients have to acquire new skills in order to adapt to the new situation. This initial adjustment period may be difficult, time-consuming and stressful⁷.

Therefore, it is essential to focus not only on physical as well as psychological health of persons with SCI. That is the most ignorant portion in our society. Thus, this research was conducted to recognize perceived level of stress and QOL of in SCI patients. However, aim of study is the assessment of stress level and quality of life (QOL) variation among spinal cord injured individuals.

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METHODOLOGY

Present descriptive cross sectional comparative recruited 165 participants (15-75 years) both genders, from government and public hospitals of Lahore and Islamabad through simple random sampling. Data was collected by using The "Perceived Stress Scale (PSS-14 item)" and "WHOQOL-BREF" (26-item). Traumatic and non-traumatic paraplegic persons were also selected after 6 months of SCI from Neurology and Neurosurgery department of selected hospitals and rehabilitation center. However, diagnosed cases of psychiatric disorders or patients of SCI with other comorbidities such as COPD, heart problems (HTN) and diabetes were excluded. Data collection was comprised of three parts:

Part 1: Contained demographic profile of the participants like age, gender, reason, level, type and duration of injury.

Part 2: Perceived Stress Scale (PSS-14) was used after permission. It consists of 14 items designed to evaluate how unpredictable and uncontrollable a person appraises his or her life. An individual is to rate items on a 5-point Likert scale, ranging from 0-"Never" to 4 "Very Often".

Part 3: WHOQOL-BREF was used after permission. This is a standard questionnaire to measure QOL for SCI patients by hitting across four domains; physical, psychological and environmental health along with social relationships with two extra items scoring overall perception of QOL and health. Informed written consent following ethical approval from UHS was done.

Statistical analysis: Data SPSS v.24 analyzed the data. Quantitative data was expressed in terms of frequency and percentages. Results were shown in tabular and graph forms.

RESULTS

Demographic Profile of the Participants: Under this section age, gender, reason of injury, type, level and duration of injury were presented in table-1 as percentage and frequency. On PSS questionnaires 87.9% experience moderate stress, 12.1% experience severe stress as shown in figure-1.

On WHOQOL-Bref the average score of physical health was 53.18, psychological health was 55.42, social relationship was

69.16 and the lowest most score among four domains was environmental health 52.73 as shown in figure-2.

Table-1: Frequency distribution of qualitative variables as percentage

Categories	Frequency	%	Valid%	Total%
Age in years				
15-30	51	30.9	30.9	30.9
31-45	63	38.2	38.2	69.1
46-60	39	23.6	23.6	92.7
61-75	12	7.3	7.3	100.0
Gender				
Male	91	55.2	55.2	55.2
Female	74	44.8	44.8	100.0
Reason of injury				
Traumatic	88	53.3	53.3	53.3
Non-traumatic	77	46.7	46.7	100.0
Level of injury				
Thoracic	41	24.8	24.8	24.8
Lumbar	84	50.9	50.9	75.8
Sacral	14	8.5	8.5	84.2
Others	26	15.8	15.8	100.0
Type of injury				
In-complete Injury	123	74.5	74.5	74.5
Complete Injury	42	25.5	25.5	100.0
Duration of illness				
<1 year	88	53.3	53.3	53.3
1-2 years	44	26.7	26.7	80.0
2-3 years	19	11.5	11.5	91.5
> 3 years	14	8.5	8.5	100.0

Figure-1: Level of Stress on Perceived Stress Scale (PSS)

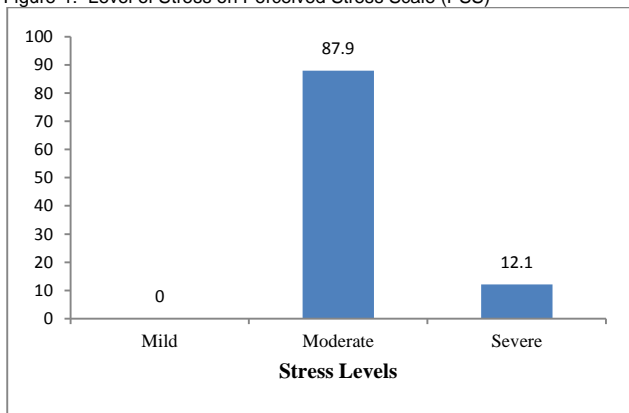
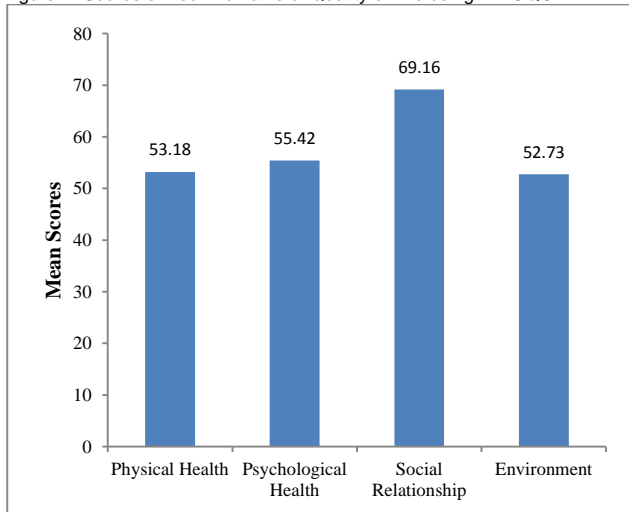


Figure-2: Scores of Four Domains of Quality of Life using WHOQOL-BREF



DISCUSSION

As for age of the participants, the individuals between the age group of 15-45 years are more prone to SCI. However, SCI can occur at any age; the younger age group is most commonly encountered with traumatic injury. However, most of the patients in the Japanese rehabilitation center had traumatic injury in younger years (<45 Years), while the middle-aged and older adults (≥ 45 years) were observed to have NTSCI⁸.

Our results are in line with the study who observed that over half of the participants of SCI were men in Galicia, Spain.⁹ Another researcher also presented that 62.3% male and 37.7% females were admitted in Peshawar, Pakistan.¹⁰ The outcomes of our study are also parallel to the results of another study held in Bangladesh¹¹.

Although both genders are at risk to get SCI, but due to the nature of their jobs, men are more prone to traumatic injuries in both developed and developing countries. Men are earning persons for the family and are more engaged in risky work (construction, carrying weight, use of cycle/motorcycle) and expose themselves to dangerous environments whereas, females are at higher risk to encounter with NTSCIs due to degenerative changes of age. According to one fact, it was noted as 26.9 per million per year¹².

In relation to the causes (etiology/ reasons) one researcher observed that road accidents was the most common reason of T-SCI in Lusaka, Zambia, the findings of our study are also in line with this study results¹³. One study reported that 94% with T-SCI and only 6% were with NTSCI admitted at Paraplegic Centre, Peshawar.¹⁰ Contrary findings were also reported by a researcher who documented that in the Republic of Ireland occurrence of NTSCI is more than double as compared to TSCI. Moreover, it has been noted that even in developed countries like Australia and Great Britain the number of NTSCI patients is on a rise^{12,14}.

T-SCI occurs in men mostly in young age due to high-falls (generally from construction sites, trees, balconies), road traffic accidents and diving. Whereas, NTSCI are generally found in middle/old age women due to estrogen deficiency as a result of menopause, low intake of calcium and Vitamin. As for level of injury, one study reported that 70% of the participants had lumbar spine injury¹⁵; our findings are also in line with this study results. In contrast, one study concluded that almost 50% injuries are occurred at the cervical spine level in Japan¹⁶.

About the type of injury, literature review documented that more than half of SCIs during 2011 and 2012 were categorized as incomplete in Japan¹⁷ that are comparable with our study findings. One researcher also reported similar results in Peshawar, Pakistan. There may be several reasons for disparity in findings as some studies recognized that most of the SCIs are incomplete and other observed complete SCIs. This phenomenon may be explained by the fact that improvement in SCI management, either in medical/surgical intervention, may improve the life expectancy of SCI patients, their functional capabilities may be restored fully or partially. Modern care facilities such as pharmacologic treatments, cell-based therapies, and other technology-driven interventions are more likely to play a combinatorial role in the evolving management of SCI.

Section-2: Stress Level of Participants with SCIs: The results of our study revealed that after injury majority had perceived moderate stress. Our findings are comparable to one study, who reported that 69% SCIs patients were living with moderate stress in India¹⁸. In contrast, another study documented that individuals having SCI experience higher levels of stress and lower levels of life satisfaction¹⁹.

One study reported that in developed countries SCI patients showed significant improvement in their health status as they have enough facilities of medical care, adaptive equipment, get enough economic and social support and have transport facilities that ultimately reduce their stress and improve QOL²⁰. WHOQOL-BREF 26-items scale has been administered to evaluate QOL of

the individuals with SCIs. Among 26 questions, the first two questions were related to individual perception and satisfaction about QOL. Furthermore, the QOL of the participants was assessed in four domains; physical, psychological, social and environmental. The most commonly affected domain was environmental. The participants of the study were facing lack of healthy physical environment and opportunities for leisure activities. In our community majority of the population lives in places that are far from the health care services and due to the inconvenient transport facilities most of the SCIs patients are unable to get benefits from modern health care facilities. Therefore, the environmental domain was obtained the lowest score among the four domains. Similar problems were also reported in one previous study¹⁶. In contrast, one study showed that social domain was highly affected followed by psychological, environmental and physical respectively¹⁸.

Second most commonly affected domain in our study was physical, due to physical pain participants were unable to move their affected body parts and not able to get around and their sleep pattern was also disturbed. Disability due to injury further prevents them to perform their activities of daily livings (ADLs). Our findings are in line with one study who identified that the physical health of SCIs patients was most affected as compare to other health aspects²¹.

The third commonly affected domain in our study was psychological. Due to disturbed bodily appearance, participants of SCIs had negative feelings. They were not happy with their lives and believed that their lives were meaningless. Previous study also reported similar psychological problems that have affected the QOL¹⁷.

Least affected domain in current study was social, due to proper attention from friends and family members, the participants were satisfied with their lives.^{22,23} The score of the social domain was the highest in current study as well. Parallel findings were also documented by one previous study.²⁰ Patients with SCIs face problems in all the four domains of health but the problems may vary due to environmental, social, psychological and physical factors. Thus, proper physical, mental, social and environmental assessment and management of all health domains can be helpful in relieving stress and improving QOL.

Limitation of the study: Data for this study was limited to six healthcare facilities of Lahore and Islamabad with a small sample size. A larger sample from the whole provinces of Pakistan may provide broader image of the QOL of patients with SCIs.

CONCLUSIONS

It was concluded that SCI is a catastrophic incident; a majority of people are young adults. In this study the age group of 15-45 Years are commonly affected, due to their nature of job percentage of male is high and most of the time these injuries are occur due to traumatic reasons. Commonly affected area is lumbar spine and most of the participants had in-complete SCI from < 1 year. According to the perceived stress scale the majority of the participants perceived moderate stress. According to the domains of WHOQOL-BREF scale most commonly affected domain was environmental, due to lack of health care facilities in their locality. The least effected domain was social relationship due to that in our country most of the SCI participants have attendant with them.

Authors' Contribution: RY&SK: Conception and design of work.
SS&NN: Collecting and analyzing the data. **JA& SIA:** Drafting the manuscript

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REFERENCES

1. Quadir MM, Sen K, Sultana MR, Ahmed MS, Taoheed F, Andalib A, Kabir R, Fariduzzaman AM, Arafat SM. Demography, diagnosis and complications of spinal cord injury patients in a rehabilitation center of Bangladesh. *International Journal of Neurorehabilitation*. 2017 Feb 14;4:244.

2. Yang R, Guo L, Wang P, Huang L, Tang Y, Wang W, Chen K, Ye J, Lu C, Wu Y, Shen H. Epidemiology of spinal cord injuries and risk factors for complete injuries in Guangdong, China: a retrospective study. *PLoS One*. 2014 Jan 28;9(1):e84733-19
3. Nulle A, Tjurina U, Erts R, Vetra A. A profile of traumatic spinal cord injury and medical complications in Latvia. *Spinal cord series and cases*. 2017 Dec 6;3(1):1-6.
4. Rahman ZM, Alam SM, Goni MS, Ahmed F, Tawhid AK, Ahmed MS. Demographic profile of spinal cord injury patients admitted in a rehabilitation centre: an observational study from Bangladesh. *Journal of Medical Research and Innovation*. 2018 Mar 1;2(2):e000111-14..
5. Grassner L, Marschallinger J, Dünser MW, Novak HF, Zerbs A, Aigner L, Trinka E, Sellner J. Nontraumatic spinal cord injury at the neurological intensive care unit: spectrum, causes of admission and predictors of mortality. *Therapeutic advances in neurological disorders*. 2016 Mar;9(2):85-94.
6. Khazaeli K, Hoseini E, Nasir AH, Amarloui M, Ganji MK. Relationship between level of injury and quality of life in spinal cord injury (SCI) patients. *Payesh (Health Monitor)*. 2019 Feb 15;18(1):45-51.
7. Toda M, Nakatani E, Omae K, Fukushima M, Chin T. Age-specific characterization of spinal cord injuries over a 19-year period at a Japanese rehabilitation center. *PLoS one*. 2018 Mar 29;13(3):e0195120-22.
8. Montoto-Marqués A, Ferreiro-Velasco ME, Salvador-De La Barrera S, Balboa-Barreiro V, Rodriguez-Sotillo A, Meijide-Falide R. Epidemiology of traumatic spinal cord injury in Galicia, Spain: trends over a 20-year period. *Spinal Cord*. 2017;55(6):588-94.
9. Zeb A, Arsh A, Bahaddar S, Ilyas SM, Khalid S. Non Traumatic Spinal Cord injury in Khyber Pakhtunkhwa Pakistan; Epidemiology, Clinical Characteristics and Complications. *Journal of Saidu Medical College, Swat*. 2019 12;9(1).
10. Prajapati S. Knowledge and attitude towards common complication of spinal cord injury among sci patients attended at CRP, BANGLADESH (Doctoral dissertation, (Bangladesh Health Professions Institute, Faculty of Medicine, the University of Dhaka, Bangladesh.; 2018-06-30.
11. Poudyal S, Neupane M, Lopchan M. Knowledge on prevention of complications related to immobility among caregivers of orthopedic patients at selected hospitals of Chitwan district. *Journal of Chitwan Medical College*. 2014;4(3):9-12.
12. McCaughey EJ, Purcell M, McLean AN, Fraser MH, Bewick A, Borotkanics RJ, Allan DB. Changing demographics of spinal cord injury over a 20-year period: a longitudinal population-based study in Scotland. *Spinal Cord*. 2016 Apr;54(4):270-6.
13. Smith É, Fitzpatrick P, Lyons F, Morris S, Synnott K. Epidemiology of non-traumatic spinal cord injury in Ireland—a prospective population-based study. *The Journal of Spinal Cord Medicine*. 2020 May 15:1-6.
14. Musukuma M, Sonkwe B, Fwemba I, Musonda P. The Use of Multiple Imputation Techniques on Short-Term Clinical Complications of Patients Presenting with Traumatic Spinal Cord Injuries. *The Open Public Health Journal*. 2019 Feb 28;12(1).
15. Kwah SB, Abdullahi A. Coping strategies in people with spinal cord injury: A qualitative interviewing. *Iranian Rehabilitation Journal*. 2018 Jun 10;16(2):195-202.
16. Tafida MA, Wagatsuma Y, Ma E, Mizutani T, Abe T. Descriptive epidemiology of traumatic spinal injury in Japan. *Journal of orthopaedic science*. 2018 Mar 1;23(2):273-6.
17. Barclay L, Lentin P, McDonald R, Bourke-Taylor H. Understanding the factors that influence social and community participation as perceived by people with non-traumatic spinal cord injury. *British journal of occupational therapy*. 2017 Oct;80(10):577-86.
18. Kang Y, Ding H, Zhou H, Wei Z, Liu L, Pan D, Feng S. Epidemiology of worldwide spinal cord injury: a literature review. *Journal of Neurorestoratology*. 2018;6(1):3.
19. Angulo SM, Reales JM, Sandín B, Santés MA. Quality of life in people with spinal cord injury. *Revista de Psicopatología y Psicología Clínica*. 2019 May 1;24(2):71-82.
20. Hachem LD, Ahuja CS, Fehlings MG. Assessment and management of acute spinal cord injury: From point of injury to rehabilitation. *The journal of spinal cord medicine*. 2017 Nov 2;40(6):665-75.
21. Chaudhary G, Mattu S. Perceived Stress and Quality of Life in Spinal Cord Injured Individuals. *Neurosurgery*. 2018 Oct 25;2(2):27-30.
22. Post MW, Van Leeuwen CM. Psychosocial issues in spinal cord injury: a review. *Spinal cord*. 2012 May;50(5):382-9.
23. Shah SZ, Rafiullah IS, Ilyas SM. Assessment of the quality of life of spinal cord injury patients in Peshawar. *Journal Pakistan Medical Association*. 2017 Mar 1;67(3):434-7.