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

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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 healthcare 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-traumatic⁵. Global increase has been noticed, 15 to 40 per million⁶. 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 States⁷.

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 accidents⁸. Moreover, there is a number of medical conditions (degenerative disc disease, tumors) that are responsible for non-traumatic spinal cord injury (NT-SCI)⁹.

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 (SCI)⁵, 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 this study is the assessment of stress level and quality of life (QOL) variation among spinal cord injured individuals.

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

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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

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

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 NTSCI.

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

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 28.5 per million per year.

In relation to the causes (etiology/ reasons) one researcher observed that road accidents was the most common reason of SCI in Lusaka, Zambia, the findings of our study are also in line with this study results. One study reported that 94% with T-SCI and only 6% were with NTSCI admitted at Paraplegic Centre, Peshawar. 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.

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 injury; 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 Japan.

About the type of injury, literature review documented that more than half of SCIs during 2011 and 2012 were categorized as incomplete in Japan 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 India. In contrast, another study documented that individuals having SCI experience higher levels of stress and lower levels of life satisfaction.

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 QOL.

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 study. In contrast, one study showed that social domain was highly affected followed by psychological, environmental and physical respectively.

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 compared to other health aspects.

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 QOL.

Least affected domain in current study was social, due to proper attention from friends and family members, the participants were satisfied with their lives.

The score of the social domain was the highest in current study as well. Parallel findings were also documented by one previous study. 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 incomplete 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 affected 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. J&A & SIA: Drafting the manuscript

**Conflict of interest:** None

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