A Study of Depression in Spinal Cord Injured Patients

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Abstract

The present study was conducted to assess the depression in spinal cord injured (SCI) patients. It was hypothesized that there would be a significant difference in the level of depression between SCI and Non-SCI controls and further it was hypothesized that acute SCI patients would have high level of depression than chronic SCI patients, whereas no such difference would be found in their respective control groups. For testing these hypotheses, an ex-post facto research with Multi-group design was done. A sample of 40 SCI patients (20 acute & 20 chronic) was selected from District Rehabilitation Centre at Post Graduate Institute of Medical Sciences, Rohtak on availability basis. An equal number of participants (key attendants of the SCI patients) were taken as control. Depression scale of Jodhpur Multiphasic Personality Inventory (JMPI, Joshi & Malik, 1983) was administered on all the participants. Data was analyzed by t-test and Duncan's Range Test. Findings revealed that the patient groups have more depression than control group. The difference was significant at $p<0.01$ level of significance. Patient group as a consequence of SCI experienced more depression than control group.Further, results indicate that the mean difference between the acute and chronic patient group was significant at $p<.05$ level. Which means that the patients in the acute group suffered higher levels of depression than their chronic counter parts. The comparison between the control groups also rendered significant findings. The patient groups as a whole, reported higher levels of depression as compared to their control counterparts. The relevance of including key attendants as control group is discussed in the findings along with the implications of the study.

Key words: *Depression, Spinal Cord Injury (SCI), Acute and Chronic, Key attendants, Psychological problems.*

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Introduction

Depression is not only fetal in it but also is a contributory factor to gravity of problem in other terminal diseases including spinal cord injury and cancer etc. The suffering associated with a depression produces its ripple effects which extend in varying degree to family members and society. Depressive illness is characterized by pervasive lowering of mood, with loss of interest and pleasure in all activities. Depression presents with symptoms of sleep and appetite disturbances, psycho-motor retardation, agitation & loss of energy, fatigue, feeling of worthlessness, inappropriate guilt, poor concentration or slow thinking, indecisiveness and suicidal tendencies. Anxiety and depression may have a considerable impact on functioning. Depressive episodes can be even more negative for those with functional losses i.e. SCI patients (Scivoletto, Petrelli & Di-luncante, et. al. 1997). Tate, et al (1994) reported that depressed SCI patients spend more hours in bed, less time out of the house and need more medical assistance and nursing than non-depressed SCI patients.

Spinal cord injuries (SCI) often have psychological consequences due to loss of functions, to alterations in the urinary tract and

sexual functioning and to other symptoms such as pain, loss of social as well work status and decrease in future expectations. The reported incidence of these pathologies varies from author to author: in the initial studies anxiety and most of all depression were considered almost inevitable consequences of SCI, but today many authors report depression in only 20-45% of patients (Hancock, et. al, 1993, & Engel, et. al, 1962). Scivoletto, Petrelli & Di-luncante, et. al. (1997) to assess the degree of anxiety and depression in SCI patients and to study the factors contributing to their genesis, 100 SCI in- and out-patients were administered questionnaires for self-rating anxiety and depression. A group of newly injured patients was followed up for a year after their discharge two psychological pathologies in SCI patients were respectively 13% (anxiety) and 16% (depression). Some characteristics were significantly associated with a higher risk of developing psychological distress: the presence of severe complications, the lack of autonomy, and low educational level. They did not observe any modification of the psychological picture over time. The lack of reduction in anxiety and depression over time could mean that the two pathologies are maintained by the obstacles SCI patients meet every day resulting from their neurological deficits.

A cross-sectional study in a Saudi sample was done to assess the level of anxiety and depressive symptoms after traumatic spinal cord injury (TSCI) by using the Hospital Anxiety and Depression Scale (HADS) to measure the level of anxiety and depression of the study population. The correlation between level of education and anxiety and depression showed that patients with a university education had higher anxiety ($p=0.0115$), depression ($p=0.0437$), and total HADS ($p=0.0272$) than patients with a lower education level. The TSCI patients with pain reported more anxiety and depression than patients who did not have pain (Al-Owesie, Moussa & Robert et. al. 2012). Hancock, Craig and Dickson et al. (1993) assessed 41 persons with SCI for depression and anxiety using objective psychological measures on three occasions over the first year of SCI and compared them with 41 able bodied controls matched for age, sex, education and, as far as possible, occupation. Results demonstrated significant differences between the two groups, with the SCI group being more anxious and depressed. No significant differences were found across time and no interactions between groups and time were detected.

Depression is a consequence of SCI and has been observed to occur in all. The literature contains much theoretical discussion about depression in patients with SCI, but provides little evidence to support claims made. Some writers have stated depression should be considered normal for all patients (Witthower, et al (1954); Stewart, 1977) that depression is an inevitable consequence of spinal cord injury (Hohman 1975; Stewart 1977) and that spinal patients who are not depressed are cause for concern. Siller (1969); Judd and Brown (1968) reports anxiety and irritability in elderly depressed patients. In a study done in past by Trieschmann (1992) reports that most the patients were not depressed and only a very small percentage of newly spinal injured people exhibit major depression which was more in acute treatment phase and tends to resolve within a week or before discharge.

Depression is common in people with spinal cord injury although not as common as in multiple sclerosis (Shnek, et al., 1997). Krause, et al. (2000) suggests that 48% of patients with spinal cord injury had clinical symptoms of depression after injury. One study showed that 60% of Portuguese patients with spinal cord injury have depressive symptoms (de Carvalho, et al. 1998). Kennedy & Evans (2001) report

high levels of emotional distress in 14% of patients at 6-24 weeks after injury, significantly higher in females. Kennedy & Rogers (2000) examined 104 patients (19 women, 85 men) for anxiety and depression, finding consistent patterns of depression that were highest during the acute phase and during the months leading up to discharge. Pain exacerbates depression (Cairns, et al., 1996; Nagumo, 2000; Ravenscroft, et al. 2000).

Although feeling of depressions vary from individual to individual or personality to personality and coping strategies/ styles etc. A diathesis-stress model is proposed to explain the increased risk of depressive symptoms after a spinal cord injury. Biological changes associated with spinal cord injury and pre-existing cognitive biases may influence the individual's vulnerability to stressful life events following the injury. The nature and frequency of stressful life events following the injury can tax the individual's coping resources. Furthermore, the perceived quality of social support and the severity of conflict within the family can influence the individual's adaptation (Boekamp, Overholser, et. al. 1996).

Family and friends of people with a SCI who have a caring role (carers), are often emotionally affected and may have to make adjustments. They are also at higher risk of depression. Studies of the effects of spinal cord injury on families usually focus on spouses and have paid little attention to other family members. Little has been published on the effects of spinal cord injury on children, siblings, parents, and other relatives. Family members suffer from stress, grief, and depression when a spinal cord injury occurs in the family. As psychological issues play an important role in such a situation, investigations have been done to evaluate the frequency of depression and anxiety and their effects on caregivers. Chan et al (2000) as well as Hadrys et al. (2011) investigated the frequency of psychological problems in the caregivers of patients with SCI and mental disorders respectively. They reported that caregiving can have a negative effect on the mental health of these persons and claim that depression and anxiety are highly prevalent among them. Further, the chronicity of the problem can negatively affect the life of these caregivers as well as their QOL. Rahimi-Movaghar et al. (2010) who found a high burden for SCI, we assumed a lower quality of life among the caregivers of SCI individuals due to the high work load.

In Iran, similar to other countries where nursing of chronically injured patients is done by family members most of the time, wives are usually the ones who are most worried about their loved ones. These individuals, not only play a role as a wife, but also act as a caregiver with an increased work load and strain. In this situation, spouses have no choice but to make numerous kinds of adjustments within their mutual relationship. The effects of care giving for a patient with a chronic disease such as SCI have been documented in several studies. In these individuals, social activities such as communication and relationships with friends and relatives are profoundly affected. In addition, most of them feel lonely and more frequently are depressed and fatigued, which ultimately results in lower health and QOL (Weitzenkamp, et al. (1997)., Russo, et al. (1995) Zarit, et al. (1986).

Chan (2000) studied this phenomenon in Hong Kong, finding that spouses of persons with spinal cord injury suffer emotional stress that is comparable to or greater than those of the injured partner. Spouses who are caregivers for people with spinal cord injury may be more depressed than their partners with disabilities. In one another study Chan, et al. (2000) report that the impact of spinal cord injury is more severe on marriages that began

before than after the injury spinal cord injury of a parent has deleterious effects on children. In addition to this Alexander, et al. (2002) described the impact of mothers with spinal cord injury on family and children

Depression is a common problem following a spinal cord injury (spinal cord injury) and can greatly interfere with the rehabilitation process because of reduced energy, negative expectations, and social withdrawal. Understanding various factors which influence a vulnerability to depression may improve the diagnosis and treatment of depressive. Assessment of depression with the help of standardized tools made it possible to conduct empirical research and determine the degree of depression. The overall intervention of SCI patients may also include management of their depression along with the other aspects of their illness. Therefore, we can facilitate the management of a disabling condition such as SCI and improve the psycho-social life for both the caregiver and their patients. Keeping all these factors in view the present study was designed with following hypothesis.

Hypotheses:

There would be a significant difference in the level of depression between SCI and Non-SCI controls.

Acute SCI patients would have high level of depression than chronic SCI patients, whereas no such difference would be found in their respective control groups.

Although the literature is flooded with the supporters of the hypothesis that depression is an essential part of response to injury but most of the literature is based on subjective findings and very little evidence is provided to support their assumptions. In last decade the research has been conducted, which evaluated the psychological variables in SCI based on modern tools of research and provided empirical evidences to support the outcome.

Method:

Design: The present study was conducted following a multigroup ex-post-facto design.

Sample: The sample consisted of 80 subjects (SCI patients and their key attendants) Subjects were drawn from outdoor department as well as those admitted in District Rehabilitation Centre at PGIMS, Rohtak. Criteria for inclusion of case were as under:

The patient group comprised of those who were afflicted with injury and these were divided into experimental groups on the basis of duration of SCI. In group I, the criteria for inclusion was injury of less than two weeks and this was designated as acute patient group. Likewise, group II, comprised of patients with injury of more than or 12 weeks. This group was designated as chronic of the key attendants of the acute and chronic patients, respectively. These formed the control group of the study.

Only patients with paraplegia and quadriplegia following spinal cord injury were included in the present study. Both males and females between the ages of 18-45 years were included in the sample. Although this type of injury can be seen in any age group but it is more common in patients who were actively involved in outdoor activities and manual labor. Patients with chronic medical illness like Cushing syndrome, hyper or hypothyroidism, multiple-sclerosis; chronic infective states and malignancies were excluded. Similarly patients with history of schizophrenia, chronic alcoholism and other psychiatric disorders were also not included. For the two control groups key attendants (close relative i.e., brother and sisters, spouse and close-friends) were selected for the acute (group III) and chronic (group IV) control groups. Thus, an attempt was made to include those relatives or key attendants who were also exposed to stressful situations similar to that of the patient. Their inclusion in the sample may help in differentiating the often role of family as

a social support system amount of distress. This may help in planning intervention particularly rehabilitation.

Material Used: Unstructured interview and Depression Scale of Jodhpur Multiphasic Personality Inventory (JMPI, Joshi & Malik, 1983) were used.

Unstructured interview: Each participant was interviewed personally by the researcher with the aim of establishing rapport and for obtaining socio-demographic details.

Depression Scale of Jodhpur Multiphasic Personality Inventory (JMPI, Joshi & Malik, 1983) Minnesota Multiphasic personality Inventory by Hathway and Mckinley, 1967 has been the most popularly used personality test in clinical settings. Indian adaptation of the same has been published in recent years by Joshi and Malik (1983) known as Jodhpur Multiphasic Personality inventory. It consists of three parts dealing with scales for assessment of psycho-neurotic (part -1), psychotic (Part II) and psychosomatic scales (part III) which further comprise of many sub-scales. There are in all 18 diagnostic scales. The authors of the test recommended the use of subscales separately for research or any other assessment purposes. JMPI has an advantage of not only assessing the intensity of problems but also the nature of the problem. Standardization of JMPI was done on the large sample consisting of 5005 Ss. The validity of JMPI scales was calculated by three methods i.e. criterion related, construct and content. It could be administered in group as well as in an individual form. It could be administered to persons of 16 years or above age belonging to both sexes. For the present study Depression scale (D) included in part-I was selected. The scale consists of 36 items. The items primarily deal with low stress tolerance, rigid conscience development and proneness to guilt feelings, feelings of serious depression and fantasies etc. Scoring of JMPI done with the help of scoring keys of stencil type provided by the authors of the test. For an affirmative response (where "Always" indicates the presence of problems) score weightage of 4, 3,2,1,0 was given for Always, Most of the time, Generally, Seldom and Never, respectively. The score weightage were in reverse direction for the items where responses were in the category 'Never' indicating the presence of a problem (such items are marked on scoring keys). For the items, Always, Most of the time, Generally, Seldom and Never carry score weight age of 0, 1,2,3,4 respectively. The total score for a particular scale is the arithmetic sum of weightage given to each.

Result and Discussion:

The obtained data was analyzed by the 't test' and Duncan Range Test (DRT). DRT is considered to be a very effective substitute for one way Anova and at the same time it is less cumbersome. It has advantage of getting information about all the possible combinations of groups.

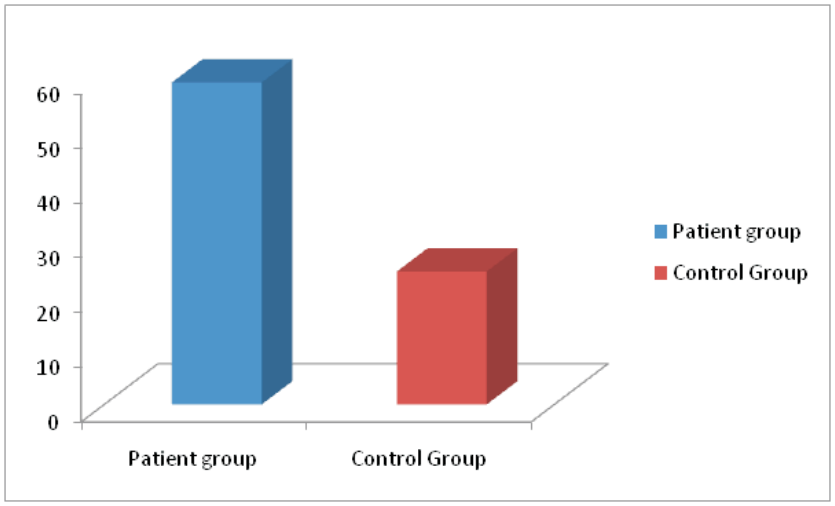
Depression consists of lack of interest in self and others, lability of somatic concerns, feelings of listlessness and restlessness, loss of appetite etc. as measured by the depression scale of JMPI. The scores obtained with the help of the above scale range between 0-144. These scores also have clinical diagnostic relevance besides the statistical analysis. Table 1 shows the significance of difference between the patient and control groups.

Table 1: Showing Significance of difference between the Patient and Control Groups

Groups	Mean	t-value	Level of significance
Patient groups	59.05	4.31	p<0.01
Control Groups	24.38		

The results in Table-1 indicate that the patient groups have more depression than control groups. The difference was significant at p<.01 level. It was also in expected direction. The first hypothesis of the study has proved. The figure 1.1 also reveals the same results. Patient group as a consequence of SCI experienced more depression than control group.

Figure 1.1 Showing Mean Depression Scores of Patients and Control Groups

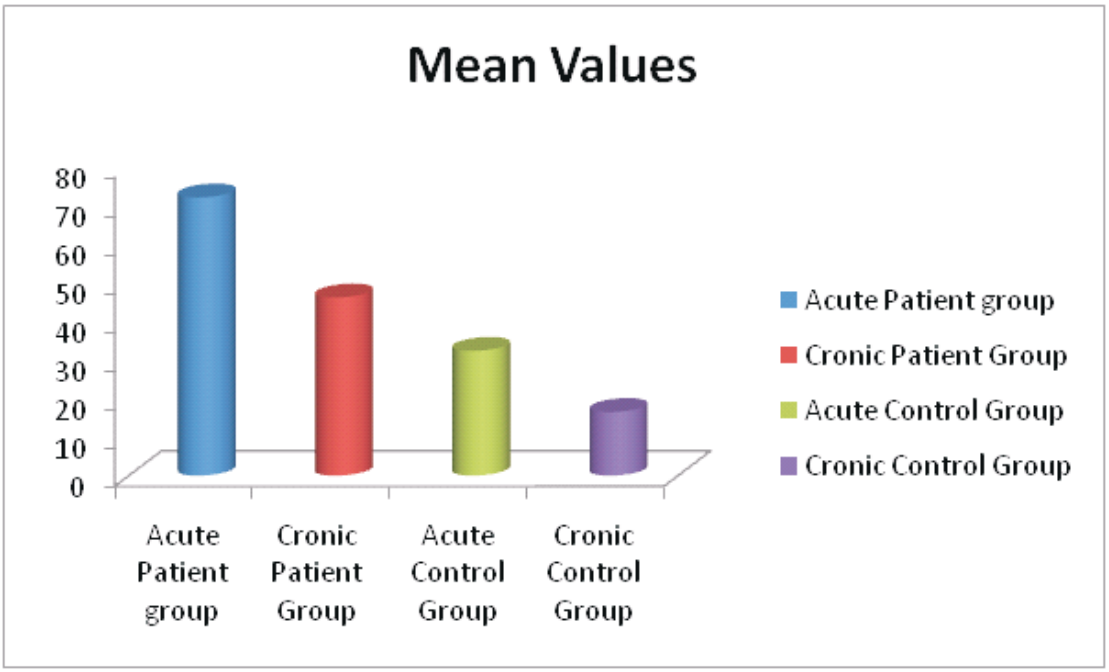


More precise findings have been obtained by the Duncan Range Test (DRT) analysis in which further division of the groups in terms of acute and chronic have been analyzed in Table - 2.

Table 2 Showing the Summary of Results of Depression in all four groups

Groups	Group 4 Chronic Control	Group 3 Acute Control	Group 2 Chronic Patient	Group 1 Acute Patient
Mean Values	16.45	32.3	46.1	72

Figure 2.1 showing Mean Depression Scores of Four Groups



The result table 2 indicates that the mean difference between the acute and chronic patient group was 25.9. To be significant the value should be more then Rp2 Value, which is 9.05. Therefore the difference was significant at p<.05 level. Which means that the patients in the acute group suffered higher levels of depression than their chronic counter parts. The comparison between the control groups also rendered significant findings. The mean difference between chronic patient and chronic control group or between acute patient and acute control group was found significant at p<.05 level. It reveals that the difference between all the possible combinations was found significant at p<.05 level of significance. These statistical findings proved the second hypothesis of the study that the acute patient group would have more depression than chronic patient group. These differences are highlighted by the pictorial presentation of the means. The patient groups as whole, reported higher levels of depression as compared to their comparable counterparts.

Acute patients reported more depression then chronic patients. This finding is not only consistent with the hypothesized difference but also with the findings reported by Trieschmann (1992) in his recent work it has been reported that the new SCI gets depressed in order for adjustment to occur. Depression was more in the acute phase than the chronic phase in which it resolved within a few weeks, due to the various types of interventions as well as activation of one's coping capacities. In addition to the above analyses the mean score as well as the individual scores of all the subjects in various groups were also interpreted in terms of their diagnostic relevance. According to the norms of the test, acute patient group fall in the category of mental health hazard whereas the chronic patient group also fall in the same category. Further individual analysis of the scores indicates a more clearly categorical picture. Among the acute

patients 95%, i.e. 19 out of 20 patients reported depression at the level of mental health hazard. In the chronic group about 60% patients could be categorized as 'mental health hazard' while 40% of them were in the 'average' category. This finding implies that more intensive intervention for management of depression is needed in case of all the acute patients, whereas it is required for some of the chronic patients, however such a high frequency of high levels of depression would not be experienced by the chronic patients.

Somasundaram et. al. (1992) reported that only 11% patients suffered from marked depression and 70% had mild depression. The low rate of depression in such studies could be attributed to lack of formal, standardized assessment of depression as well as difference in staff rating and patients rating of depressed mood (Cushman 1990 and Ernest, 1987). Although the difference between both of the control groups were found significant. As the whole the control groups experienced relatively less depression than the patients group. The findings based on the diagnostic interpretation support the concerned hypothesis.

Overall findings of the present study indicate that acute patients reported higher level of depression than the chronic patients. Likewise the depression was more in both the patient groups than their respective comparable groups, which is supported by Hancock, et al (1993) that prevalence of depression was 25% in SCI patients only 3% in controls comparing the obtained finding indicate higher percentage, i.e., 77.5% patients were mental health hazard,. So for the level of their controls revealed 22% as opposed to 3%. However this difference could be due to the fact that in the present study the key attendants were taken as the comparable group, who were also exposed to the stress and were affected by the injury of patient, physical disability and insomnia in the patients also disturbed the controls especially during nights. It has been rightly pointed out by Oliver (1982) and Richmond (1990) that adjustment to SCI is more often a more difficult problem for the family members than the injured person himself. SCI occurs not only to the individual but to the entire family.

In last, it has been pointed out that this area has received limited attention from researchers and only few empirically designed studies have done, especially in India. The insight gained by the study has opened new vistas for future research.

Conclusion:

Spinal cord injured patients under go severe physical, psychological and social stresses and reacts in different way to cope with stress. While doing so they may exhibit psychological disturbances, some of which may interfere with their treatment and rehabilitation. Proper evaluation and assessment of psychological problems, environmental and social factors aggravating the physical problems and their management may supplement the efforts of an orthopedican. The findings of the present study would have relevance in planning of intervention, particularly rehabilitation with emphasis of family involvement, so that the rehabilitation program will involve not only the patients but also the key attendants & family members of the patients.

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