Arch Neurosci. 2018 July; 5(3):e66718. doi: 10.5812/archneurosci.66718.

Published online 2018 June 12. **Research Article**

Depression in Patients with Spinal Cord Injury Referred to the Specialized Centers in Tehran, Iran

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Received 2018 February 13; **Accepted** 2018 March 10.

Abstract

Background and Objectives: Depression has an effective role in the performance of patients with spinal cord injury (SCI) and causes several health disorders that affect all life aspects of such patients including their goals and communications and most importantly, health-related quality of life. The current study aimed at investigating depression in patients with SCI referred to the specialized centers of SCI in Tehran, Iran.

Materials and Methods: In the current descriptive study, depression status of 51 patients with SCI referred to the specialized centers of the SCI in Tehran from July to November 2017 was investigated using the second version of Beck depression inventory (BDI). The mean depression in and the different levels of the SCI were compared using the statistical tests of Kruskal-Wallis H and independent samples t test; the severity of depression in these groups was determined according to test instructions and the distribution of individuals into different classes of severity of depression was determined and compared using the statistical tests of Pearson correlation, chi-square, and the Fisher exact.

Results: The mean score of BDI was above 18 in age and gender groups and there was no significant difference between the groups regarding age (P = 0.301), gender (P = 0.199), and level of SCI (P = 0.374). But, there was a significant difference in the distribution of individuals according to the classification of the severity of depression in the age groups (P = 0.045), however, the difference in the distribution of subjects was not significant in both the gender and the SCI level groups (P = 0.567 and P = 0.477, respectively).

Conclusions: The obtained results revealed the need for paying more attention by the authorities and policy makers to the psychological complications, especially depression and providing proper therapeutic services for patients with SCI.

Keywords: Spinal Cord Injury, Depression, Mental Disorder

1. Background

Spinal cord injury (SCI) is one of the most serious diseases of the central nervous system and is one of the most costly diseases (1). The global prevalence of SCI is estimated 223 to 755 per million people (2), but this figure in Iran is about 40 to 50 people per million (3).

Although the prevalence of SCI is not high, its effects can be devastating. This injury usually leads to permanent paralysis of voluntary muscles and loss of sensation below the lesion level that can be accompanied by reduced mobility, functional independence, defect of work and social activities, and negative effects on the health and welfare of the individual (2). Krause found that the individuals with SCI face four main groups of problems in the society: 1- psychological problems including loneliness, depression, and stress; 2- dependence and control of feelings; 3- health problems such as pain; and 4- environmental problems such as access to facilities (4).

SCI is associated with an abnormal range of psychological disorders (5). Also, drug abuse and the risk of suicide in the population of SCI are much more common than the ones with physical capabilities (6, 7). Psychological disorders in this injury are associated with poor matching to injury and can make rehabilitation difficult (8).

It is more than 40 years that the specialists in the field of behavioral and health sciences study the psychological problems of patients with SCI (9). Depression after SCI can be caused by a disorder in matching to multiple envi-

ronmental, social, and health-related issues (10). In terms of severity, the range of depression disorders varies from mild depression and adjustment disorders to major depression (11). Depression syndrome refers to a system of effective and visible neurological and cognitive syndromes with negative effects on the performance of the individuals (10). The patients with tangible symptoms of depression after SCI report some problems in the following areas: assessment of their own health, free time activities, social mobility, social integration, and purposeful social follow up (12). Even mild and moderate levels of depression have a great effect on health, everyday life activities, and interpersonal communications among healthy individuals (11).

Here is a question that "Have attempts improved the diagnosis and treatment of depression in the individuals with SCI, despite the prevalence (10). The results of the research indicate that diagnosis and treatment of depression during rehabilitation of acute SCI should be a priority (12). This need is expressed by many health professionals and many individuals with SCI request more access to psychological support, and educational services with emphasis on their emotions and needs during the rehabilitation phase (13).

Due to the major effects that depression has on the level of independence and individual and social activities of the patients with SCI and the small number of studies conducted on depression in such patients in Iran, the current study aimed at investigating the extent and severity of the incidence of depression in patients with SCI referred to the specialized centers in Tehran.

2. Methods

The participants of the current descriptive and comparative study were 51 patients with SCI from the specialized centers of SCI in Imam Khomeini hospital and Red Crescent Center of Tehran, Iran. The inclusion criteria were willingness to participate in the study, the diagnosis of SCI by the neurologist, non-application of antidepressants, and the absence of orthopedic or neurological defects other than SCI.

In the current study, the samples were recruited by observing the inclusion criteria after getting informed consent from them and providing the demographic information. After a complete description of the goals and stages of the study, the patients were asked to complete Beck depression inventory (BDI) carefully. Then, the total score was determined according to the questionnaire's instruction, and the mean of scores was calculated in terms of age, gender, and level of SCI. Also, the incidence of depression in such patients was determined in age and gender groups and different levels of SCI by comparing the scores of the individuals in each age and gender group and different levels of SCI with test scoring instruction (0 to 13: without depression, 14 to 19: mild depression, 20 to 28: moderate depression, 29 to 63: severe depression).

BDI is a 21-item self-reporting measure (14). This test evaluates the depression symptoms such as feeling uncomfortable, feeling guilty, etc. It is believed that the scores 13 - 14 make the difference between being depressed and not depressed (15). In general, this test is a sensitive and appropriate tool to investigate the depression in the individuals with SCI (13). In the study on the psychometric properties of the Persian version of BDI, Ghasemzadeh reported Cronbach's alpha coefficient of 87% and test-retest coefficient of 74% (16). In fact, BDI-II evaluates both the existence and severity of depression syndrome (17).

In the current study, the distribution of severity of depression was specified according to age and gender groups and the levels of SCI, and comparison of the distribution of scores in different severity levels in these groups was conducted using Pearson chi-square and the Fisher exact tests. Also, the mean score of questionnaire in male and female groups was compared using independent samples t test and the mean score of the questionnaire was compared in different age groups and different levels of SCI using the Kruskal-Wallis test.

3. Results

According to the obtained results, the mean scores of BDI was above 18 in all age, gender, and different levels of SCI (cervical, thoracic, and lumbar) groups, which meant a degree of depression in all groups (Tables 1 - 3). Independent samples t test showed no significant difference between the mean scores of male and female groups (P = 0.199). Also, the Kruskal-Wallis test showed no significant difference between the mean scores in age groups as well as groups of different levels of SCI (P = 0.301 and P = 0.374, respectively).

Distribution of individuals in different classes of depression (Tables 1 - 3):

1- In terms of the age groups: In all age groups, more than 67% of the individuals got the score above 13 (which indicated the existence of depression). The distribution of individuals in different classes (which indicated the extent of depression) was different from each other according to a specific pattern; therefore, the test score class of 29 - 63 (severe depression) was mostly observed in the age group of 47 - 63 years, the test score class of 19 - 28 (moderate depression)was mostly observed in the age group of 30 - 46 years, and the test score class of 14 - 19 (mild depression)was mostly observed in the age group of 13 - 29 years.

Table 1. Distribution of Individuals in Different Classes of Depression and the Mean Scores of BDI in Terms of the Age[a]

Age Group, y	Distribution in Depression Classes				Number	Mean ± SD
	Severe	Moderate	Mild	Without		
13 - 29	4 (16)	3 (12)	10 (40)	8 (32)	25	18.28 ± 11.062
30 - 46	1 (6.3)	9 (56.3)	3 (18.8)	3 (18.8)	16	20.63 ± 7.375
47 - 63	4 (40)	2 (20)	2 (20)	2 (20)	10	23.50 ± 13.352
Total	9 (17.6)	14 (27.5)	15 (29.4)	13 (25.5)	51	
P value	0.045					0.301

[a]Values are expressed as No. (%).

Table 2. Distribution of Individuals in Different Classes of Depression and the Mean Scores of BDI in Terms of Gender[a]

Gender	Distribution in Depression Classes				Number	Mean ± SD
	Severe	Moderate	Mild	Without		
Female	3 (20)	6 (40)	3 (20)	3 (20)	15	23 ± 10.967
Male	6 (16.7)	8 (22.2)	12 (33.3)	10 (27.8)	36	18.81 ± 10.267
Total	9 (17.6)	14 (27.5)	15 (29.4)	13 (25.5)	51	
P Value	0.567					0.199

[a]Values are expressed as No. (%).

Table 3. The Distribution of Individuals in Different Classes of Depression and the Mean Scores of Beck Test in Terms of the Level of SCI (n = 51)[a]

Level of SCI	Distribution in Classes of Depression				Number	Mean ± SD
	Severe	Moderate	Mild	Without		
Cervical	4 (33.3)	2 (16.7)	5 (41.7)	1 (8.3)	12	23.25 ± 10.472
Thoracic	4 (12.9)	9 (29)	8 (25.8)	10 (32.3)	31	18.29 ± 10.354
Lumbar	1 (12.5)	3 (37.5)	2 (25)	2 (25)	8	22 ± 11.263
Total	9 (17.6)	14 (27.5)	15 (29.4)	13 (25.5)	51	
P Value	0.477					0.374

[a]Values are expressed as No. (%).

2- In terms of the gender groups: In the two male and female groups, more than 70% of the individuals got the score above 13 (which indicated the existence of depression).

3- In terms of the groups of levels of SCI: In all the groups of the levels of SCI, more than 65% of the individuals got the score above 13 (which indicated the existence of depression).

Comparison of the distribution of scores among age and levels of SCI using the Fisher exact test (respectively, exact- P value = 0.045 and exact- P value = 0.477), and gender using Pearson chi-square test (P = 0.567) showed a significant difference in the level of depression in the age groups, but no significant difference in gender groups and the different levels of SCI.

4. Discussion

The results of the current study showed that the mean scores of BDI in all age and gender groups and the level of SCI indicated a degree of depression in all the groups, and although the mean was higher in some groups (in moderate depression) and lower in other groups (in mild depression), the statistical tests did not show any significant differences between them.

In terms of distribution: the majority of people in all age and gender groups and the level of SCI had a degree of depression and less than 33% of the subjects were not depressed in all the groups. There was a significant difference between the distribution of these individuals in different classes of depression based on age, while there was no significant difference based on gender and the level of SCI. Therefore, the distribution of these individuals in the

classes of the extent of depression depended on age, but not on gender and level of SCI. In general, the distribution of the individuals according to the percentage showed that the higher the age groups, the more severe the depression class with the highest percentages in that age group.

The researchers consider psychological conformity to SCI as the result of interaction between the personal, biological, and environmental conditions. Craig stated that the individuals facing permanent neurological defects caused by SCI wake up with this lesion every morning and cannot go out; on the other hand, they have stress due to facing the architectural barriers, economic costs, work limitations, changing family roles and relationships, and the individuals with no understanding of patients with SCI may interact with them abnormally, which may cause the maintenance of mental disturbances in such patients. In a study by Craig et al., a group of patients with SCI were compared with the control group including the individuals without disability in four periods for two years and after that the SCI results indicated a significant difference in depression and anxiety between the SCI and control groups (18). These results can be considered consistent with those of the current study; although in the current study, the obtained scores were compared with those of the questionnaires' instruction. Of course, what made the result different was that the mean of scores that Craig obtained for patients with SCI in each of the evaluation periods did not reach the cut off score for the states of depression, despite the difference with that of the normal individuals; while the means in all groups of the current study were higher than the cut off score, which indicated more severe depression in the samples of the current study. Results of Kennedy et al. in another study indicated that a gradual increase in the BDI scores from weeks 24 to 48 and the scores higher than the cut off score were related to depression, while the scores reduced to less than the cut off score after discharge and after the week 48. Although their study differed from the current study in terms of two aspects: first, patients were investigated in different periods in the current study and second, they were not investigated factors such as age, gender, and the level of SCI and their relationship with the level of depression, their results were consistent with those of the current study since their results indicated the prevalence of depression in patients with SCI (19). In another study conducted by Krause et al. that investigated depression after SCI and its relationship with age, gender, race, and socioeconomic status, 48% of the participants showed clinical symptoms of depression and the result was consistent with that of the current study in terms of the prevalence of depression in patients with SCI (although a higher rate was reported in the current study). A direct relationship between the age of the patient and the age at the onset of the complication with the symptoms of depression was observed in their study, also in the current study, there was a significant difference in terms of the distribution different classes of depression in the age groups, and on the other hand, there was no relationship between the symptoms of depression and gender in the study by Kraus, which was consistent with the results of the current study (11).

Although it is expected that assessment tools that include the items of physical signs (such as BDI) show the level of psychological disorders higher (20, 21), Craig et al. showed that the studies using BDI had no greater amount of depressed mood compared with the other instruments. In this study, Craig divided the studies into two classes of studies on hospitalized patients and studies on patients living in the community. The investigation on the first group reported 20% to 43% of depression disorder. But, in the second group the reported percentage was lower. Therefore, in three studies approximately 17% to 24% had severe depression and 41% to 48% of the individuals with SCI had specific symptoms of depression; another eight studies reported symptoms of depressed mood and negative mood in 11% to 60% of the individuals (2). As can be observed, the results of the current study showed that the percentages of the individuals with mild, moderate, or severe depression were more than those of the previous studies; hence, 67% of the individuals showed a degree of depression at the lowest state that was more than that of reported by Craig.

4.1. Conclusions

The results of the current study showed that the individuals with SCI were at risk for different degrees of depression and the distribution of the individuals showed that the severity of depression increases with age increase, but it was not different in terms of gender and level of SCI. Since severity and distribution of depression were higher in the current study compared with the previous studies conducted in other countries, it is apparently needed that the authorities and policy-makers dealing with such patients pay more attention to their psychological disorders, especially depression.

The negative view of some patients about the psychological disorders and their unwillingness to fill the questionnaire can be mentioned as the limitations encountered in the current study.

It is suggested to investigate the level of quality of life and its relationship with depression in patients with SCI in Iran.

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