



Assessment of Daily Living of Patients with Spinal Cord Injury: A Cross-Sectional Study in Kermanshah

Masoud Hatefi ^{1,2}, AmirHosein Meisami^{3,4}, Alaleh Dalvand^{5,*} and Milad Borji ^{6,7}

¹Faculty of Medicine, Ilam University of Medical Sciences, Ilam, Iran

²Clinical Research Development, Imam Khomeini Hospital, Ilam University of Medical Sciences, Ilam, Iran

³Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran

⁴Department of Emergency Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

⁵Tehran Medical Branch, Islamic Azad University of Medical Science, Tehran, Iran

⁶Student Research Committee, Ilam University of Medical Sciences, Ilam, Iran

⁷Non-communicable Disease Research Center, Ilam University of Medical Sciences, Ilam, Iran

*Corresponding author: Tehran Medical Branch, Islamic Azad University of Medical Science, Tehran, Iran. Email: alalehdalvand@gmail.com

Received 2021 June 19; Revised 2021 June 29; Accepted 2021 July 14.

Abstract

Background: Spinal cord injuries (SCI) are a variety of chronic diseases that various causes such as trauma may contribute to its onset. One of the problems in these patients is the problem of physical activity and, consequently, daily activities.

Objectives: This study aimed to assess daily living of patients with SCI.

Methods: In this descriptive cross-sectional study in 2019, 120 patients with SCI in Kermanshah were included in the study using purposive sampling. The instruments used in this study fell into two parts. One part included the demographic characteristics of the SCI patients, and the other part was a questionnaire of the rate of the Impact on Participation and Autonomy questionnaire (IPA-P). Data were analyzed by SPSS software version 16 using descriptive tests such as mean and standard deviation.

Results: The result showed there was a significant relationship between demographic characteristics such as education ($P < 0.007$), time of spinal cord injury ($P < 0.01$), and income ($P = 0.000$). Also, the results showed there was a relationship between Autonomy and Participation, and the age of patients and their autonomy and participation decreased with age ($P = 0.000$, $R = 0.72$). Most of the patients had severe problems with daily activities. Also, most patients had very poor scores in relation to daily living activities.

Conclusions: Considering the low rate of participation and autonomy in patients with SCI, it is suggested to conduct studies aimed at improving their self-care and social participation.

Keywords: Participation and Autonomy, Spinal Cord Injury, Daily Living

1. Background

Chronic diseases face a lot of problems; therefore, one of the important challenges of the health system is the management of chronic diseases, including spinal cord injury (1). Spinal cord injuries (SCI) are a variety of chronic diseases, and that various causes such as trauma may contribute to its onset (2). In patients with SCI, the costs associated with the disease, the family, as well as the health-care system are significant. In the United States, SCI are the most costly type of injury (3, 4). On the other hand, in various studies in Iran, the prevalence of SCI has been studied, which has been reported as significant. In the study of Ramezani et al., the prevalence of SCI in hospitalized patients in the years 2015 to 2017 was between 0.2 to 0.6% of patients (5). In the study of Haddadi et al., it was equal to 906 patients (3), which is a prominent amount.

This disease can reduce function, cause pain, decrease quality of life, sexual dysfunction, and cause pressure ulcers (6-8). Other problems that appears with SCI include post-traumatic stress disorder, osteoporosis, orthostatic hypotension, and auto-reactive disorders (9, 10). SCI have long-term devastating effects, such as delay in returning to social and professional life, due to the wide range of different physical, psychological, and social dimensions (11). Participation means that individuals can participate in the design, implementation, and monitoring of health interventions that affect their health status (12). One of the problems in these patients is the problem of physical activity and, consequently, daily activities (13, 14).

Social participation is an issue broader than physical activity and means participation in activities such as religious rituals, training, recreational, cultural, charity, and outdoor affairs (15). The concept of participation involves

different aspects of the individual's life and, depending on the health status of the individual, in appropriation with their health, can affect the various aspects of his or her life (16, 17). One of the most important goals for improving health status is to measure and evaluate the patient's health (17). Therefore, it is important to examine the extent of patient participation (16). Decreased muscle strength caused by sensory and motor disorders is also one of the most important concerns of these patients. In fact, physical activity has an important role in rehabilitation and prevention of diseases that should be paid special attention to (18, 19).

2. Objectives

Regarding the prevalence of SCI and its effect on the quality of life and the ability of participation in society in this group of patients, this study aimed to assess participation in daily activities of patients with SCI.

3. Methods

3.1. Study Design

In this descriptive cross-sectional study in 2019, patients with SCI in Kermanshah were included in the study using purposive sampling.

3.2. Study Population

The study population included patients with SCI in Kermanshah. According to previous studies, the sample size was estimated to be 120 patients. The researcher began the process of conducting this study after obtaining the ethical approval (ethics code: IR.KUMS.REC.1398.323).

3.3. Inclusion and Exclusion Criteria

3.3.1. Inclusion Criteria

Inclusion criteria were patients with more than one year of SCI of paraplegia, age range of 18 - 65, residency in Kermanshah province, and willingness to participate in the study. It should be noted that in this study only patients with spinal cord injury due to trauma were examined.

3.3.2. Exclusion Criteria

The patients who had another chronic disease with a question from the caregiver and other family members, such as mental, cognitive, cardiovascular, CVA, diabetes, etc., along with SCI were excluded.

3.4. Data Gathering

3.4.1. Demographic Characteristic

The instruments used in this study fell into two parts. One part included the demographic characteristics of the SCI patients including age, marital status, income, marital status, family support, time of spinal cord injury, and education.

3.4.2. Participation and Autonomy Questionnaire

The other part was a questionnaire of the rate of the Impact on Participation and Autonomy questionnaire (IPA-P) in two sections, which had 32 questions in five areas. The first section of this questionnaire included dimensions of autonomy at home, autonomy outside home, family role, social relations, work and education. The scoring range for these 32 questions is in the range (zero = very weak to four = very good). In this questionnaire, a higher score indicates more participation and autonomy, and the overall score of autonomy and participation in the areas considered is from zero to 128. The second section of the questionnaire with nine items includes mobility, self-care, family role, financial status, leisure time, social relationships, work and education, and support and assistance of others which was rated in the 3-point Likert scale (from zero = no problem to 2 = severe problem). It should be noted that the scale of the scores of the questionnaire is from zero (less effect of the injury on the nine areas) to 18 (greater effects of the injury on the nine areas) (20-22). In the study of Hosseini et al., Cronbach's alpha coefficient for total autonomy and participation was 0.90, and the reliability of the tool was confirmed (16). The researchers used the Persian version of this questionnaire.

3.4.3. Activities of Daily Living Questionnaire

This questionnaire has seven questions with the aim of examining people's daily activities. The components of this questionnaire include eating, getting dressed and undressing, going to the toilet, going to bed or going out, bathing, doing things related to appearance, and walking. In this questionnaire, the final score is between 0 - 14, and the lower the score, the higher the degree of dependence (23, 24).

3.5. Method of Research

The research method was that the trained questionnaires, who were part of the research team and nursing students, questioned by referring to the home of patients with SCI in Kermanshah. Thus, patients with SCI were identified by referring to welfare organization, rehabilitation

centers, and hospitals. Then those patients or their family members were contacted, and if they obtained permission from the patient for an interview, the researchers referred to the patients' home and interviewed. The patients and their family members were assured that the participation or non-participation in this study had no harm to them, and if they signed informed consent, they could participate in this study. It was also assured that the questionnaires would be reported in general without first and last name. For illiterate patients, questionnaires were completed with the help of a researcher.

3.6. Data Analysis

Data were analyzed by SPSS software version 16 using descriptive tests such as mean and standard deviation, and analytical tests such as independent *t*-test and multiple regression at a significance level of 0.05.

4. Results

Table 1 shows, there was a significant relationship between demographic characteristics such as education ($P < 0.007$), time of spinal cord injury ($P < 0.01$), and income ($P = 0.000$). Also, the results showed there was a relationship between autonomy and participation, and the age of patients and their autonomy and participation decreased with age ($P = 0.000$, $R = 0.72$).

Table 2 shows most of the patients had severe problems with daily activities. Also, most patients had very poor scores in relation to daily living activities.

5. Discussion

It is important to pay attention to the quality-of-life situation and the factors that may affect it (25). According to the findings, the rate of participation and autonomy of patients was poor. Also, most patients have fair participation and autonomy in family roles and social relationships; however, they have poor participation and autonomy in dimensions of autonomy at home, autonomy outside home and work, and education. In the study of Kumar and Gupta, SCI could reduce the quality of life of these patients (26), which is consistent with the results of this study. In the study of Hosseini et al., it was shown that devotees had good and very good participation in two areas of social relations and autonomy at home, while in the areas of autonomy outside the home, work and education and family life had a poor participation autonomy. On the other hand, in the study of Hosseini et al., participation and autonomy of most devotees were good and very good, respectively, which did not conform to the results of this study

(16). The reasons for this inconsistency can be explained by the difference in years and the research environment that may have been effective in this regard.

According to the findings, there was a correlation between the age status and the rate of participation and autonomy of the patients. As age increased, participation and autonomy of patients, especially in mobility, were reduced. In the study of Heiland et al., the elderly age group, the activities of daily living (ADL) were declined with age, which is consistent with the results of this study (27). In the study of Khan et al., in the elderly age group, 52.5% of the elderly above the age of 75 and older had disabilities (28), which is consistent with the results of this study.

One of the strengths of this study is to examine the status of social participation and autonomy in patients with SCI, which has been studied in quantitative studies in Iran. Also, its sampling method was among the other strengths of this study, such that we tried to choose the study sample so as to present the total population. Also, in this study, sampling was carried out by referring to the home of the patients, which is one of the advantages of this study.

5.1. Conclusions

Considering the low rate of participation and autonomy in patients with SCI, it is suggested to conduct further studies to improve their self-care and social participation.

Acknowledgments

Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran.

Footnotes

Authors' Contribution: MH did study conception, data analysis, and manuscript writing. AD, AM, MB, and MH, did data collection and manuscript writing. AD did result interpretation and manuscript writing. MB did study design, manuscript writing, and manuscript revision for important intellectual contents. All authors read and approved the final manuscript.

Conflict of Interests: The authors declare no conflict of interest.

Ethical Approval: The Ethics Committee of the Kermanshah University of Medical Sciences approved this study (IR.KUMS.REC.1398.323).

Funding/Support: Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran (project code: 3008222).

Table 1. Patients' Autonomy and Participation Status Based on Demographic Characteristics ^a

Demographic Variables	No. (%)	Autonomy and Participation	P-Value	F
Marital status			0.000	57.88
Has spouse	72 (60)	47.05 ± 6.18		
No spouse	48 (40)	38.16 ± 6.40		
Family support			0.000	8.75
Low	14 (11.7)	38.92 ± 6.70		
Medium	61 (50.8)	42.11 ± 6.76		
Much	45 (37.5)	46.80 ± 7.81		
Time of spinal cord injury (y)			0.01	4.12
Under 5	22 (18.3)	39.59 ± 7.78		
Between 5 -10	76 (63.3)	44.73 ± 7.46		
Above 10	22 (18.3)	43.13 ± 6.92		
Education			0.007	5.12
Illiterate	41 (34.2)	40.70 ± 8.13		
Diploma and under the diploma	72 (60)	44.65 ± 6.75		
Top diploma	7 (5.8)	48.00 ± 8.86		
Income			0.000	8.39
Weak	62 (51.7)	45.51 ± 7.50		
Medium	48 (40)	40.22 ± 6.24		
Good	10 (8.3)	46.70 ± 9.29		

^a Values are expressed as No. (%) or mean ± SD.

Table 2. Frequency of Patients' Perception of the Impact of the Lesion on Their Participation in Daily Activities ^a

Subgroups	No Problem	Mild Problems	Severe Problems
Mobility	19 (15.8)	17 (14.2)	84 (70.0)
Self-care	20 (16.7)	45 (37.5)	55 (45.8)
Activities inside and outside the home	20 (16.7)	55 (45.8)	45 (37.5)
Financial situation	4 (3.3)	46 (38.3)	70 (58.3)
Free time	14 (11.7)	54 (45)	52 (43.3)
Relationships and social life	16 (13.3)	39 (32.5)	65 (54.2)
Formal or voluntary work	21 (17.5)	31 (25.8)	68 (56.7)
Education and training	24 (20)	22 (18.3)	74 (61.7)
Helping and Supporting Others	23 (19.2)	33 (27.5)	64 (53.3)

^a Values are expressed as No. (%).

References

- Nikbakht A, Bastami A, Norouzi Tabrizi K, Pashaei Sabet F, Gomarverdi S. [Exploring home-based rehabilitation in traumatic spinal cord injury patients: A qualitative study]. *Iran J Nurs Res*. 2017;**11**(6):32–41. Persian. doi: [10.21859/ijnr-11065](https://doi.org/10.21859/ijnr-11065).
- Chamberlain JD, Buzzell A, Gmunder HP, Hug K, Jordan X, Moser A, et al. Comparison of all-cause and cause-specific mortality of persons with traumatic spinal cord injuries to the general Swiss population: Results from a national cohort study. *Neuroepidemiology*. 2019;**52**(3-4):205–13. doi: [10.1159/000496976](https://doi.org/10.1159/000496976). [PubMed: [30763935](https://pubmed.ncbi.nlm.nih.gov/30763935/)].
- Haddadi K, Yosefzadeh F. Epidemiology of traumatic spinal injury in north of Iran: A prospective study. *Iran J Neurosurg*. 2016;**1**(4):11–4. doi: [10.18869/acadpub.ijrns.1.4.11](https://doi.org/10.18869/acadpub.ijrns.1.4.11).
- Wyndaele M, Wyndaele JJ. Incidence, prevalence and epidemiology of spinal cord injury: What learns a worldwide literature survey? *Spinal Cord*. 2006;**44**(9):523–9. doi: [10.1038/sj.sc.3101893](https://doi.org/10.1038/sj.sc.3101893). [PubMed: [16389270](https://pubmed.ncbi.nlm.nih.gov/16389270/)].
- Ramezani S, Mohtasham-Amiri Z, Kouchakinejad-Eramsadati L, shokatjalil H, Yousefzadeh-Chabok S. Epidemiology of traumatic spinal fractures and spinal cord injuries in Guilan, north of Iran. *Caspian J Health Res*. 2019;**4**(1):12–5. doi: [10.29252/cjhr.4.1.12](https://doi.org/10.29252/cjhr.4.1.12).
- Emami Razavi SZ, Kazemi S, Azadvari M, Ghajarzadeh M. Evaluation of different types of pain in patients with spinal cord injury. *Arch Neurosci*. 2017;**4**(3). e13971. doi: [10.5812/archneurosci.13971](https://doi.org/10.5812/archneurosci.13971).
- Yazdanshenas Ghazwin M, Chaibakhsh S, Latifi S, Tavakoli AH, Koushki D. Quality of life in Iranian men with spinal cord injury in comparison with general population. *Arch Neurosci*. 2014;**2**(3). e21529. doi: [10.5812/archneurosci.21529](https://doi.org/10.5812/archneurosci.21529).
- Hansen NKS. Essential readings in rehabilitation outcomes measurement. *J Head Trauma Rehabil*. 1999;**14**(4):428–31. doi: [10.1097/00001199-199908000-00011](https://doi.org/10.1097/00001199-199908000-00011).
- van den Berg ME, Castellote JM, Mahillo-Fernandez I, de Pedro-Cuesta J. Incidence of spinal cord injury worldwide: A systematic review. *Neuroepidemiology*. 2010;**34**(3):184–92. doi: [10.1159/000279335](https://doi.org/10.1159/000279335). [PubMed: [20130419](https://pubmed.ncbi.nlm.nih.gov/20130419/)].
- Krause JS, Saunders LL, Newman S. Posttraumatic stress disorder and spinal cord injury. *Arch Phys Med Rehabil*. 2010;**91**(8):1182–7. doi: [10.1016/j.apmr.2010.05.012](https://doi.org/10.1016/j.apmr.2010.05.012).
- Bowley D, Boffard K. *Pattern of injury in motor vehicle accidents*. USA: World Wide Wounds; 2002. Available from: <http://www.worldwidewounds.com/2002/october/Bowley/Patterns-Of-Injury-MVAS.html>.
- Mordouei Z, Shaikhfathollahi M, Rezaeian M, Ahmadinia H, Mirzaei M, Safarian M, et al. Acceptability of the Persian version of impact on participation and autonomy (IPA-p) scale among patients with positive angiography in Rafsanjan Ali-Ibn Abitalib Hospital in 2017: A descriptive study. *J Rafsanjan Univ Med Sci*. 2019;**17**(11):1055–66.
- Amberkar O, Agarwal B, Singh Y, Shete R, Mullerpatan R. Level of sports participation and performance among people with spinal cord injury. *Crit Rev Phys Rehabil Med*. 2019;**31**(1):43–51. doi: [10.1615/CritRevPhysRehabilMed.2019029750](https://doi.org/10.1615/CritRevPhysRehabilMed.2019029750).
- Barclay L, Lentin P, Bourke-Taylor H, McDonald R. The experiences of social and community participation of people with non-traumatic spinal cord injury. *Aust Occup Ther J*. 2019;**66**(1):61–7. doi: [10.1111/1440-1630.12522](https://doi.org/10.1111/1440-1630.12522). [PubMed: [30156293](https://pubmed.ncbi.nlm.nih.gov/30156293/)].
- Gilmour H. Social participation and the health and well-being of Canadian seniors. *Health Rep*. 2012;**23**(4):23–32. [PubMed: [23356042](https://pubmed.ncbi.nlm.nih.gov/23356042/)].
- Hosseini M, Borhani F, Graminejad N, Rabani F, Vagharseyyedin SA. [Perceptions of veterans suffering from spinal cord injury regarding participation in daily activities and the impact of the lesion on the extent of participation]. *Journal Mil Med*. 2018;**20**(4):446–53. Persian.
- Vazirinejad R, Esmaeili Nadimi A, Tekyeh SH, Rezaeian M, Kazemi M. The effect of ischemic heart diseases on the participation of patients in comparison to healthy people in Rafsanjan (2009). *J Community Health*. 2012;**6**(1):38–47.
- Lawrason SVC, Todd KR, Shaw RB, Martin Ginis KA. Physical activity among individuals with spinal cord injury who ambulate: A systematic scoping review. *Spinal Cord*. 2020;**58**(7):735–45. doi: [10.1038/s41393-020-0460-4](https://doi.org/10.1038/s41393-020-0460-4). [PubMed: [32322042](https://pubmed.ncbi.nlm.nih.gov/32322042/)].
- Santino N, Larocca V, Hitzig SL, Guilcher SJT, Craven BC, Bassett-Gunter RL. Physical activity and life satisfaction among individuals with spinal cord injury: Exploring loneliness as a possible mediator. *J Spinal Cord Med*. 2020:1–7. doi: [10.1080/10790268.2020.1754651](https://doi.org/10.1080/10790268.2020.1754651). [PubMed: [32379551](https://pubmed.ncbi.nlm.nih.gov/32379551/)].
- Cardol M, de Haan RJ, van den Bos GA, de Jong BA, de Groot IJ. The development of a handicap assessment questionnaire: The impact on participation and autonomy (IPA). *Clin Rehabil*. 1999;**13**(5):411–9. doi: [10.1191/026921599668601325](https://doi.org/10.1191/026921599668601325). [PubMed: [10498348](https://pubmed.ncbi.nlm.nih.gov/10498348/)].
- Cardol M, de Haan RJ, de Jong BA, van den Bos GA, de Groot IJ. Psychometric properties of the Impact on Participation and Autonomy Questionnaire. *Arch Phys Med Rehabil*. 2001;**82**(2):210–6. doi: [10.1053/apmr.2001.18218](https://doi.org/10.1053/apmr.2001.18218). [PubMed: [11239312](https://pubmed.ncbi.nlm.nih.gov/11239312/)].
- Cristian A. *Living with spinal cord injury*. New York, USA: Demos Health; 2004.
- Mohamadzadeh M, Rashedi V, Hashemi M, Borhaninejad V. [Relationship between activities of daily living and depression in older adults]. *Salmand*. 2020;**15**(2):200–11. Persian. doi: [10.32598/sija.13.10.180](https://doi.org/10.32598/sija.13.10.180).
- McDowell I. *Measuring health: A guide to rating scales and questionnaires*. Oxford, UK: Oxford University Press; 2006.
- Menati W, Baghbanian A, Asadi-Lari M, Moazen J, Menati R, Sohrabivafa M, et al. Health-related quality of life and socioeconomic status: Inequalities among adults in west of Iran. *Iran Red Crescent Med J*. 2017;**19**(7). e55571. doi: [10.5812/ircmj.55571](https://doi.org/10.5812/ircmj.55571).
- Kumar N, Gupta B. Effect of spinal cord injury on quality of life of affected soldiers in India: A cross-sectional study. *Asian Spine J*. 2016;**10**(2):267–75. doi: [10.4184/asj.2016.10.2.267](https://doi.org/10.4184/asj.2016.10.2.267). [PubMed: [27114767](https://pubmed.ncbi.nlm.nih.gov/27114767/)]. [PubMed Central: [PMC4843063](https://pubmed.ncbi.nlm.nih.gov/PMC4843063/)].
- Heiland EG, Welmer AK, Wang R, Santoni G, Fratiglioni L, Qiu C. Cardiovascular risk factors and the risk of disability in older adults: Variation by age and functional status. *J Am Med Dir Assoc*. 2019;**20**(2):208–212 e3. doi: [10.1016/j.jamda.2018.05.013](https://doi.org/10.1016/j.jamda.2018.05.013). [PubMed: [30006016](https://pubmed.ncbi.nlm.nih.gov/30006016/)].
- Khan ZA, Singh C, Khan T. Correlates of physical disability in the elderly population of Rural North India (Haryana). *J Family Community Med*. 2018;**25**(3):199–204. doi: [10.4103/jfcm.JFCM_160_17](https://doi.org/10.4103/jfcm.JFCM_160_17). [PubMed: [30220851](https://pubmed.ncbi.nlm.nih.gov/30220851/)]. [PubMed Central: [PMC6130166](https://pubmed.ncbi.nlm.nih.gov/PMC6130166/)].